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MONTHLY REPORT

OF

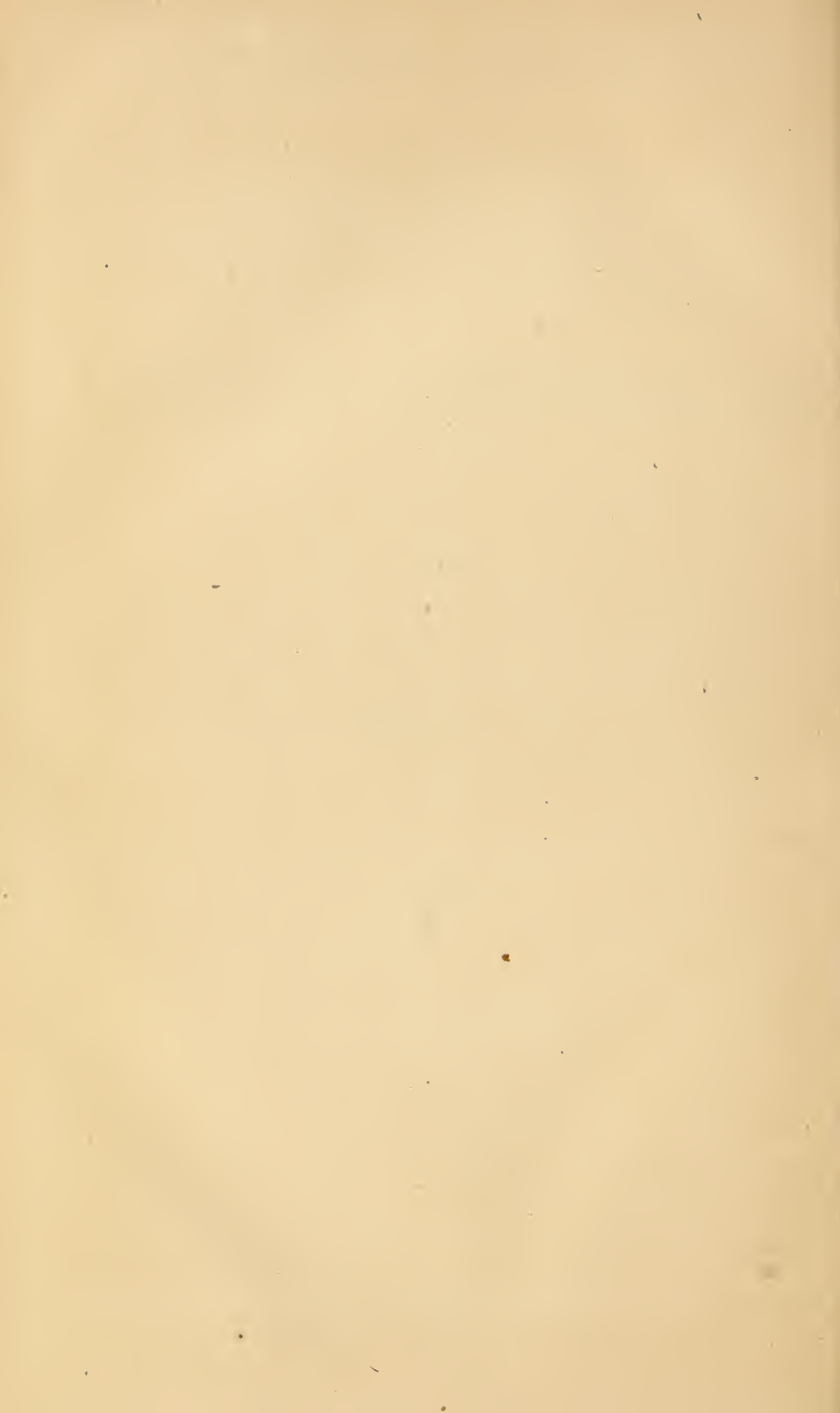
THE AGRICULTURAL DEPARTMENT

FOR

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,

Washington, December, 1865.

The present monthly report contains less of statistical information than any previous one, for two reasons—that no circular is issued to our correspondents to be returned in the month of December, and the calendar year is so near its close that tables of general statistics are not published until in the January report, when they can be presented in a more complete form. The department has availed itself of the room thus given to lay before Congress and the country one of the best articles yet published on the important subject of weights and measures. It seems to me it will satisfy every person that no better system can be devised than the metric system of France, whether it is to be regarded as a national or international one. The subject of weights and measures has been given to Congress by the Constitution for its exclusive legislation, in order to avoid, what the country is fast running into, a change in the weights and measures whenever the boundaries of each State are passed, and as often as the general assembly of each is convened. The rapid and extensive intercommunication between the States by railway transportation makes an unchanging and uniform system of weights and measures the more important. Such a system is the one here recommended. The confusion that prevails in Great Britain should admonish us that legislative action is essential to protect this country from as great a misfortune. But the increasing trade with foreign countries, and the desire to learn more of their agriculture, manufactures, and commerce, imperatively demand an international system of weights and measures, and, perhaps, coinage, and the metric system was devised with special reference to its becoming such international system. It is to be wished, therefore, that Congress, at its present session, will not overlook the importance of early legislation on this subject.

The other articles in this report will be found to have their usual interest, and several of them relate to the Pacific States and Territories. The agriculture of such large districts, so rapidly settling, and possessing a climate so unlike that of the Atlantic States, cannot but interest all. That climate has products peculiar to it, and the growth and interchange of these for the productions of the Atlantic agriculture, begin to attract more attention than heretofore. To facilitate this interchange, by making the peculiar products of the Pacific coasts better known here, is an object of national importance, and the remarks on this point, in the present report, deserve the consideration of all persons.

I am pleased to learn that a wider interest is manifested in the proposed international fair at Paris in 1867 than was shown in like previous fairs. It is

desirable that a permanent act should be passed by Congress prescribing the mode and conditions by which the general government, the States, agricultural societies, committees, and individuals, may co-operate in all international fairs. Both the interests and the honor of the industrial occupations of our country demand their full representation at all such exhibitions.

To the ministers and consuls of the United States in European and other governments I return my warmest acknowledgments for the interest they have manifested in the progress of this department and of agriculture. They have forwarded many things relating to foreign agricultural production to me, and communicated much statistical and other valuable information to this department through the Secretary of State. In thus looking beyond the line of official duties, in order to aid the advancement of American agriculture, I am sure they will be most kindly remembered by the American farmer.

Early in January circulars will be sent to postmasters and others in the southern States, asking that names of individuals, in every county, suitable for permanent correspondents, be sent to this department, that information, through them, may be obtained of the state of the agriculture of each county, as is now done of the other States, and that seeds and reports may be sent to such correspondents for distribution. The south should now have every aid to a restoration of its former agricultural prosperity, and to give it, as far as is in my power, is my earnest desire.

ISAAC NEWTON, *Commissioner*.

WEIGHTS AND MEASURES.

The last Congress created a standing Committee on Weights and Measures, but no report from that committee was made on the important subject committed to its care. This was not an unexpected result, because the subject is most perplexing; it demands mature consideration, and the condition of the country engrossed the thoughts and care of every member of Congress. But now, with the return of peace, comes a return also of the more usual subjects of legislative action, and we cannot suppose that this committee will allow the present Congress to pass away without a careful examination of the condition of weights and measures in the different States, and reporting such a remedy as will give to the whole country a uniform standard of both.

The different States are prescribing their own standards, and changing them often; and thus we are hastening to that state of weights and measures that now prevails in Great Britain. An English writer thus refers to it:

“If we buy a bushel of wheat at Bridgend, we get 168 pounds; at Darlington, 73½; at Worcester, 62; at Monmouth, 80; at Shrewsbury, 75; at Wolverhampton, 72; at Manchester, 60 or 70, according to whether we are dealing in English or American wheat; at Newcastle, 63; at Cærmarthen, 64.”

In that country the evil has attained so great magnitude that it seems to be incurable, for every attempt by Parliament to prescribe a uniform standard has

created an opposition, perhaps insurmountable, from the fact that the proposed remedies so much conflict with local standards that but ordinary opposition to change from so many sources creates a dissatisfaction apparently so great that Parliament is indisposed to encounter it. It is the part of wisdom in Congress to prescribe a uniform standard before a like confusion and opposition prevail here.

But this subject is not to be regarded as one belonging to the United States alone. The facilities of travel and transportation are such that commerce has almost obliterated nationalities, and a most perplexing want everywhere felt is an international system of weights and measures. The experience of this department is, that estimates of the amounts and values of the products of foreign countries cannot be determined with certainty, because of the uncertainty attending the value of weights and measures of the tables reported to the department. This arises from the fact that in different parts of the same country, as we have seen is the case in Great Britain, the same measure has different weights. Among the German nations the same measure is in a like manner different. For instance, the *scheffel*, a dry measure of Germany, has these various capacities: In Bremen it is 2.0377 bushels; in Brunswick, 8.5560 bushels; in Hamburg, 2.8969 bushels; in Hesse-Cassel, 2.21 bushels; in Prussia, 1.5121 bushel; in Dresden and Leipsic, 2.8583 bushels; in Wurtemberg, 4.9090 bushels. Other weights and measures of the same name present like differences. Austrian tables of agricultural production come to us for notice, and whether they are to be changed to our own measures by the Hungarian or other provincial standard of value, often cannot be determined here.

There is no necessity for the existence of such national absurdities or international embarrassments in relation to weights and measures. In our judgment it needs but an enlightened action of Congress to remove them, for the reason that France has prepared an international system which Great Britain has recognized, but not enforced; and if this government would both recognize and enforce it here, Great Britain would do the same. Three commercial nations, such as France, England, and the United States, adopting a system, would insure its adoption in all other commercial nations.

It is useless to endeavor to improve the French system, except in adopting abbreviations in addition to the full names, in order to facilitate commercial operations. Whatever improvements we may suppose might be made would be far more than counterbalanced by preventing it from becoming an international system. If every nation and every legislative body will set itself to making changes, the commerce of the world will soon encounter the difficulties which so much embarrass both it and the internal trade of almost every country.

During the first and second sessions of the last Congress we published in these reports several articles unfolding the nature of the French metrical system, and particularly showing that the names and values were not French, but were new—the first taken from the Greek and Latin languages, and the second formed on a certain scientific base. Since the publication of these articles, we have received in the *London Popular Science Review* the ablest article on the

metric system of France that has been written. We reserved it for publication until this time, when the present Congress should convene, and now republish it, hoping that it will receive that careful reading which its own excellence and that of the system of weights and measures it advocates demand of all, but most especially of that committee of Congress to whom has been assigned the duty of providing a remedy for a great national and international evil. This article is written by Mr. James Spear, of England, and is as follows:

THE METRIC SYSTEM.

"To estimate each species of magnitudes a fixed unity or measure is necessary, which shall serve for term of comparison. Formerly in France, as in other countries, there reigned the greatest confusion in all measures. Each province had its own particular measures, and the result was extremely embarrassing to trade and commerce. The kings of France attempted, but in vain, to establish uniformity and to bring back all the measures to those of Paris. At length, on the 8th of May, 1790, the constituent assembly issued a decree whereby it recognized the necessity of a complete reform. A commission, nominated by the academy, and composed of Borda, Lagrange, Laplace, Monge, and Condorcet, was charged to prepare a general system of measures. The new system was adopted by the convention, sanctioned by the legislative corps, and declared obligatory from the 2d of November, 1801. It reigns this day throughout the whole extent of France, and is called the *metric* system, because all the unities of measurement derive from the unity of length—that is, from the metre."—*Briot's Arithm. Transla., chap. 6.*

The law above referred to was destined, however, to remain for a lengthened period in abeyance, or with only partial fulfilment; nay, even to encounter the hostility of the revolutionary authority itself, and of successive governments, until that of Louis Philippe took up the matter with earnestness and promptitude, and after a sharp struggle succeeded in passing a law which should abolish all the old and complicated machinery of weights and measures still existing in the different departments of France, and reinstate the new system, called "metrique," in all its fulness and simplicity. This law, now in vigor, came into operation January 1, 1840.

The confusion and disorder which formerly prevailed in France could scarcely exceed that which is prevalent in England at the present day from the same cause. Nor have successive acts of Parliament been able to arrest the evil, nor to introduce anything like order and regularity in our multifarious scales of weights and measures. Local customs, combined with ignorance and prejudice, are everywhere prevalent, to the great detriment of our home and foreign trade. Our standards are many and arbitrary, and have no connexion one with another. But of what use can standards be where there is no power to enforce them, where stability is unknown, and nothing but abuses and caprice seem to govern our markets?

In linear measure our scales are discordant, nor does the same name indicate a fixed value. Our miles, ells, and fathoms are all variable, according to circumstances; and in different trades there are special measures of length particular to each, but unknown to the rest of the world. Similar discrepancy exists in the measurement of surface, with much enhanced difficulty and perplexity; and we have besides the statute acre about six or seven others of different dimensions. But our measures of capacity and weight are positively intolerable, and fluctuate to an incredible degree, with an infinity of names and designations, chiefly of the most unreliable and even suspicious kind. We have at least eleven different scales of weight. A stone may mean any one of ten different quantities; and, for climax of absurdity, the hundred-weight in some localities means 112 and in others 120 pounds. For measures of capacity we have not fewer than twenty different bushels. The latter term is sometimes used to designate a weight, but in either acceptation a most variable quantity. The same may be said of quarters and loads, which have no fixed meaning, but vary from town to town. And

as for pipes and hog's-heads, who can tell their capacity? It would be idle to pursue the tale any further, and we revert with sensible relief to our proper subject.

It ought to be observed that England had been invited by France to co-operate in the work of reform, for it was the desire of the latter to frame a system of weights and measures which should be applicable to the requirements not only of the two countries themselves, but of all civilized nations. It was proposed that an equal number of commissioners, chosen from the French Academy and from the Royal Society of England, should meet at some convenient parallel of latitude, between the equator and the north pole, in order to ascertain the exact length of the second's pendulum, for the purpose of deducing an invariable standard which should serve as a unitary basis for the new system. This courteous invitation was not responded to by England, for reasons which it is not necessary now to consider. The French Academy, therefore, waiving the co-operation of England, proceeded alone, and after mature deliberation rejected the unit of the pendulum, and decided in favor of a standard to be deduced from the dimensions of the earth itself. An arc of the meridian, that comprised between Dunkirk and Barcelona, was measured in the most elaborate and careful manner, and by means of this arc, and of that previously measured in Peru, the length of the quarter of the meridian, or the distance from the pole to the equator, (supposed at the level of the sea,) was calculated. This length was subdivided into ten million equal parts, and one of these parts was taken for the fundamental unit of the new system; and to this unit the name "*metre*" (*par excellence*) was given, from the Greek word *métron*, which signifies measure.

Objections have been urged again and again against the exactness of this terrestrial arc. We have even been told that the *metre* itself would have to undergo material alteration if a more accurate survey and a fresh system of triangulation were undertaken. Such objections, however, are more fanciful than real, at least as regards the *metre*, which is really the only question we have to consider. The length of one minute or sixtieth of a degree (called a nautical mile in French) is, according to Briot's Arithmetic, equal to 1,852 metres. This tallies with a geographical mile estimated in English yards, which is equal (in round numbers) to 2,025 yards, the *metre* being equal to $39\frac{1}{3}$ inches nearly. Now, if we multiply the former number by 60, and the product by 90, we shall have the length in metres of the quadrant of the circle, $1,852 \times 60 \times 90 = 10,000,800$, which is 800 metres in excess of the supposed subdivision. Let us now suppose, for a moment, that the French *savans* had made an error equal to 800 metres in their calculation; this error, although great in absolute amount, is relatively small on the *metre*, with which we are concerned; the error (relative) would only amount to $\frac{8}{1000000}$; that is, would be less than one twelve-thousandth, ($\frac{1}{120000}$.) We think this approximation quite sufficient for all practical purposes; and, taking all things into account, along with the spheroidal form of the earth, it is probable that the relative error is even less. Be this as it may, we need no longer concern ourselves about the original standard, whether it be exact or whether it be fanciful; such objections as those alluded to are like dust in the balance when compared to the whole of this invaluable system. The standard with which we have to do is the model in platinum preserved in the archives of Paris, which can never be lost, for it exists not only in the primary unit, but also in those derived from it. And even were all the standards destroyed, if such a case were possible, they might again be recovered without the labor of a direct remeasurement of the terrestrial arc by the known relation between the second's pendulum and the *metre*. Precisely with a view to establish the most efficient safeguard of the primary standard, Borda had determined with the greatest nicety the dimensions of the pendulum beating seconds at Paris, which, in fact, approach most nearly to those of the *metre* itself, being $0^m.99385$; the difference, therefore, being less

than $\frac{1}{100}$ of the metre. With these data, by a fresh determination of the length of the second's pendulum, invariable as this length is at the same latitude, temperature, and level, (of the sea,) a new standard metre, exactly equal to the original, could be constructed. The Academy had previously resolved that the unit of length, whatever might be its value, should form the basis of the new system, the prototype to which all other units, whether of surface, volume, or weight, were referable; and, accordingly, we perceive how, in the most skilful manner, this luminous idea has been realized and the unity of the whole system exemplified. It was also resolved that the number 10 should be the *unique* factor of the system, so that the different scales of measurement might be in harmony with our system of numeration, which is decimal, and all quantities be expressed in decimal numbers; hence the greatest facility and despatch were insured in the necessary arithmetical operations. The Greek numerical prefixes, *deca*, *hecto*, *kilo*, *myria*, were chosen for the multiples, and the Latin, *deci*, *centi*, *mili*, (by convention,) for the submultiples or fractions of the various denominations.

Thus LINEAR MEASURE assumes the most simple and comprehensive form, as in the following sketch:

Myriametre	10, 000 metres.
Kilometre	1, 000 "
Hectometre	100 "
Decametre	10 "
Metre	1 "
Decimetre	$\frac{1}{10}$ "
Centimetre	$\frac{1}{100}$ "
Millimetre	$\frac{1}{1000}$ "

Moreover, any one of these multiples or fractions may be employed as a distinct unit whenever it is convenient, and decimalized accordingly. The French usually express great lengths in kilometres, or even in myriametres; for example, the distance between two towns is said to be 32 myriametres and 5 kilometres, and this is written 325 kilom., (equivalent to about 203 English miles,) and may be enunciated either way. The length of a canal is said to be 48 kilometres 7 hectometres, and this is written 48 k. m. 7, (equivalent to about 30 miles and a fraction.) On the contrary, lengths very minute are reckoned by millimetres; thus, the thickness of a mirror is said to be $8\frac{5}{10}$ millimetres, which is written 8 mm. 5.

SURFACE.—The units of surface are the squares constructed on the units of length. The principal unity of surface is the square metre. Then we have the decametre square, hectometre square, kilometre square, and on the other side the decimetre square, centimetre square. As this is square measure, the units of surface are from hundred to hundred times greater by definition; the value of each unit is one hundred-fold that of the unit immediately inferior. Thus the square metre is equal to one hundred square decimetres, and so forth. For measuring land the principal unit employed is the square decametre, which then takes the name of are, (from Latin *area*;) the only units used in land measure are the hectare or 100 ares, the are, and the centiare or $\frac{1}{100}$ of the are. Thus an estate is said to consist of 125 hectares and 47 ares, a garden of 23 ares and 50 centiares, and these quantities are written:

125.47 hectares.

23.50 ares.

The hectare is equal to $2\frac{1}{2}$ acres, nearly. The following tabular sketch will enable the reader to understand this very simple scale at a glance:

Hectometre square	Hectare = 100 ares.
Decametre square	Are.

Metre square..... Centiare = $\frac{1}{100}$.
 Decimetre square.
 Centimetre square.

CUBIC MEASURE.—A cube is a solid, terminated by six equal squares, such as a die. By definition the units of volume in the metric system are cubes, which have for sides the units of length. The principal unit of volume is the cubic metre. On the one hand we have, in ascending order, the decametre cube, the hectometre cube, &c.; and on the other, in descending order, the decimetre cube, the centimetre cube, &c. Each unit is equal to one thousand times the unit immediately inferior in the scale. The whole series, therefore, forms a geometric progression, as do the foregoing, the ratio of which is 1,000; the ratio of the linear series being 10; that of the superficies, likewise, being 100. To measure a volume is to ascertain how many cubic metres it contains, and what, if any, fraction of cubic metre; or, in other words, to ascertain how many cubic units of each order it contains, and it may contain 999 units of each order. Thus the same scale suffices to express both abstract and concrete numbers, and it depends on choice how many concrete orders are to be considered. This constitutes one of the chief beauties of this elastic and wonderful system. The same feature is observable in the two preceding scales of length and surface; but in the latter two numerals must be set apart to each order; where more than one is considered, as in square measure, each order may contain upwards of 99 units. In the cubic scale, however, we must be careful to appropriate three ranks of numerals to each order when separately considered. An example will illustrate this principle. The following quantity, 24507638,0750098, m. c., can be enunciated as a simple decimal number of one order, (cubic metre;) or we may imagine it partitioned into sections of three numerals right and left of the comma, and enunciate the whole volume in units of the different orders *gradatim*. Thus: 24 cubic hectometres, 507 cubic decametres, 638 cubic metres, 75 cubic decimetres, 9 cubic centimetres, 800 cubic millimetres. Or shortly thus: 24 hectom. cub., 507 decam. cub., 638 m. cub., 75 decim. cub., 9 centim. cub., 800 mill. cub.

In France the cubic metre serves to measure stacks of firewood, and there it is called *stere*, the multiple of which in use is the *decastere*, (10 steres,) and the sub-multiple *decistere*, and even *centistere*, ($\frac{1}{10}$ and $\frac{1}{100}$ of the *stere*.)

MEASURES OF CAPACITY.—The *litre* (equivalent to $1\frac{3}{4}$ pint, nearly) is the principal unit capacity for liquids and grain; its capacity is that of a cubic decimetre. The multiples of the litre are: the *decalitre*, *hectolitre*, *kilolitre*, or 10, 100, 1,000 litres. The sub-multiples are: the *decilitre* and *centilitre*, &c., or the tenth and hundredth of the litre. These vases are of cylindrical form, and made of tin when destined for liquids; in this case the height of the vase is double the diameter of the base. They are made of wood, and the height is equal to the diameter of the base, when destined for grain.

WEIGHTS.—The fundamental unity of weight is the *gram*; the multiples are the *decagram*, the *hectogram*, the *kilogram*, or 10, 100, 1,000 grams. The subdivisions are the *decigram*, the *centigram*, the *milligram*, or the tenth, hundredth, thousandth part of the gram. The kilogram (equivalent to $2\frac{1}{2}$ pounds avoirdupois, nearly) is the weight in vacuo of a decimetre cube of distilled water at its maximum of density—that is, at 4° above 0 of the centigrade thermometer. The standard in platinum of the kilogram is deposited in the archives of state in Paris. Since the kilogram is the weight of a cubic decimetre, or of a litre of water, the gram (the thousandth part) is the weight of a centimetre cube of distilled water at its maximum density. For great weights the quintal, (metric,) equivalent to 100 kilograms, is used; and for ships' cargo the metric ton, equivalent to 1,000 kilograms. A vessel of one hundred tons is a vessel capable of carrying 100,000 kilograms. Each of the units of weights, and also

each of the measures of capacity, has its double and its half, as by law established. We give in a table the corresponding units of volume and weight :

Metre cube.....	Kilolitre.....	Metric ton.....	(1,000 kilogs.)
Decimetre cube....	Litre	Kilogram	(1,000 grams.)
Centimetre cube...	Millimetre	Gram.	
Millimetre cube.....		Milligram.	

We perceive that each series constitutes a decreasing geometric progression, the ratio of which is $\frac{1}{1000}$. The cubes of the metre, decimetre, and centimetre, filled with distilled water, are equivalent in weight to the metric ton, kilogram, and gram, respectively, and the relation established between volume and weight is of great importance in the mechanical arts and in trade. The specific gravity of a body, whether solid or fluid, as we know, is the relation or ratio of the weight of any volume of this body to the weight of an equal volume of water. Now, as we have a series of volumes and weights corresponding in the metric scale, expressed in single units, the investigation of the specific gravity of bodies, this being a constant quantity in each, is proportionally simplified. Assuming as unit of volume the decimetre cube or litre, and as unit of weight the kilogram, as is the ordinary practice in the arts in France, then the specific gravity of a body is the weight in kilograms of a decimetre cube of this body. This simple process furnishes also an easy method of ascertaining the weight and therefore the value of merchandise of large bulk; for the cubic dimensions of this bulk being found by direct measurement, as can be done by the metric scale better and more accurately than by any other, this volume, multiplied by the specific gravity of the substance, gives the weight of the merchandise in kilograms. In delicate measurement, such as in pharmacy and chemical analysis, the gram (along with its subdivisions) and its concomitant unit of volume, the cubic centimetre, are used. And in shipping, the metric ton and its corresponding unit of volume, the cubic metre, furnish the utmost advantage and facility in estimating either the tonnage or the cargo of the ship.

It is almost superfluous to contrast the unity and harmony of this unique system called *metric* with our own grotesque scales of weights and measures. In the former, all the parts are subordinate to the metre, the primary unit; they all emanate from it, and radiate as from a common centre. Our standards, on the contrary, are not only arbitrary, but unconnected one with another; there is, moreover, no fixity about them, but, like so many independent variables, they pass through different series of values, from maximum to minimum, with the utmost caprice and nonchalance. We learn from Kelly's Universal Cambist that no fewer than 150 different pounds were in use in different parts of Europe before the introduction of the half-kilogram, which seems destined to supersede them all. The kilogram, however, has never varied; indeed, how could it vary, in any appreciable degree, without being brought back to the metric standard?

Herein consists the luminous idea of the French *savans*, in rendering all the parts of the new system homogeneous, to wit: that they anticipated any subsequent variations in the all-important standards of capacity and weight, and prevented this by making these standards, dependent on each other, to depend on the metre, so that they could not vary as long as it remained intact, and if any standard were lost, it could be recovered from the remaining.

The second important decision of the French Academy of Science was, that the new system, in all its branches, should have but one divisor, and that 10 or a power of 10, according to the necessity of the scale. This, for practical purposes, is perhaps the most important part of the great reform; for, besides the infinite simplification introduced thereby in all arithmetical operations connected with the metric scales, this solitary factor would itself, better than any specific, cure the mania of tampering with the various scales in order to suit local caprice and prejudice. The standards themselves could never have varied, as they

once did in France and now do in England, had there been but one divisor' (especially if that one were the radix of the system of numeration,) for the evil of a multiplicity of divisors reacts on the standards themselves, and renders them uncertain. Let any one glance at our tables of weights and measures with their innumerable divisors, chiefly of the worst kind, and he will there see evidence of this principle; let him look at square measure, and at the innovations there introduced to simplify, if possible, but at all events to render this table less obnoxious; then let him pass on to cubic measure and solid measure, with their addenda in appalling number. If we interrogate a hapless surveyor or architect, or those engaged in the iron trade, we learn the enormous difficulties they have to contend with in making their calculations; oftentimes each is obliged to supplement the tables or shift for himself as he best may, having no Ariadne's thread to extricate him from the labyrinth in which he becomes involved. And if this be true of professional men, how are non-professional men situated? Generally speaking, they must receive upon trust those results which concern them, and which they cannot verify, which is a great evil, and opens a wide door to every species of fraud and contestation. Our readers are probably aware of the vast improvement the metric system has introduced, in giving uniformity and stability in place of so many jarring scales and standards. Now let us consider for one moment the amazing simplicity superinduced by making the number 10 the sole multiplier and divisor in the new system. The consequence is that the laborious process of compound multiplication and division, of reduction from higher to lower denominations, and *vice versa*, is virtually abrogated; the arithmetical process is performed mechanically. A mere point or comma, inserted in a number, suffices for multiplication or division by a power of 10, and supersedes the necessity of any arithmetical operation, except the simply mechanical one of advancing the comma forwards or backwards, as the case may be. We trust our readers are well acquainted with this important principle in arithmetic; but, lest there should be any to whom this is new, we must be pardoned if we give an illustration. For example, let us consider a short number in the metric scale, such as the following: 35 metres, 6 decimetres, 3 centimetres. Now, as each order of units is equal in value to 10 units of the succeeding order, (by definition,) it is evident the number supposed is equal to 35 metres and 63 hundredths of a metre, and is, therefore, a decimal number, and falls within the abstract decimal scale, although expressing a concrete quantity, as was before remarked; for simplification, then, the given number is written $35^m,63$, and the only reduction consists in making the subordinate units fall into their proper column.

Had we to multiply this number by 10, it is done by passing the comma one rank to the right; thus, $356^m,3$; (by 100, two ranks to the right; thus, $3,563^m$.) The reason of this is obvious, and arises from 10 being the basis of our system of enumeration, so that a numeral (6) placed on the right of a number (35) in effect multiplies this number by 10; the fraction $\frac{6}{10}$ is itself multiplied by 10 in expunging its denominator, and the last fraction, $\frac{3}{100}$, becomes now $\frac{3}{10}$; hence the whole number ($35^m,63$) has been multiplied by 10 in multiplying each part of it by 10, and this has been effected by a simple displacement of the comma one rank to the right. Had we to divide the same number $35^m,63$ by 10, we move the comma one rank to the left; thus, $3^m,563$, (3 metres, 5 decimetres, 6 centimetres, 3 millimetres, or 3 metres 563 millimetres,) and we see that each cipher in the proposed number remains unchanged, but with tenfold less value; the whole number has therefore been divided by 10 by the simple displacement of the comma one rank to the left. Had we to divide by 100, this is done by passing the comma two ranks to the left, or by any power of 10, and it is done by passing the comma as many ranks to the left as the index or exponent of the power contains units; and if the number proposed does not admit of this, zeros must be added to its left. For instance, had we to divide the num

ber proposed $35^m,63$ by 10^3 , (or 1,000,) the quotient becomes $0^m.03,563$, equal to 35 millimetres and 63 hundredths of a millimetre—that is, a thousand times less.

Let it be remembered that the denominator of a decimal number is unity, followed by as *many zeros* as there are ranks of decimals.

The *nomenclature* of the new system has been severely criticised in England. Its denominations have been called barbarous, a reproach we scarcely expected, inasmuch as these are derived from the Greek. But common people, it is urged, are not learned and cannot understand such strange designations. The answer is that the tradesmen or artisan will soon understand what he requires, and how to name it; if he cannot enunciate the numerical quantity of the object he requires in Greek and Latin prefixes, he will resort to English numerals to express its value. But we have conclusive evidence on this point. English workmen engaged on the continent, in railways and other works, have learnt, and do learn, all they require of the metric (aye, and the monetary) system of France with the greatest facility, and when once learnt they prefer it to our own. But the advantage of the twofold classification in the metric system is too great to be abandoned or departed from on trivial grounds. The divisions and subdivisions of the various scales are so clearly defined by this double nomenclature of Greek and Latin prefixes, as could not be effected by any other process. To change this nomenclature would lead to ambiguity; for instance, a decimetre means 10 metres, but if we were speaking of a decimetre square, (we should mean not 10 but 100 square metres,) and were to translate the name of this unit into English, such translation would most probably engender confusion.

In conclusion, the metric system has been tried already and proved, not only in France, but in Belgium, in Switzerland, in Italy, and in parts of Germany. In Tuscany we read of its adoption in a moment, as if by magic, and that it was in general use, as if it had existed in that country for half a century. In short, according to the unanimous testimony of competent witnesses, the system is pronounced to be the most perfect ever invented. By the force of its intrinsic merits, it is progressing steadily through the civilized world, and seems destined eventually to supersede every other system, whether good or bad. Under these circumstances we, as a commercial nation, dare no longer ignore this great reform; no longer slight this new competitor, that appears on the scene with unfettered limbs; we must make him ours—our auxiliary, and shake off the old trammels, if we expect to continue victors in the race. Our men of science, in compact body, our superior chemists and engineers, have given their voice in favor of the new system, and are even obliged to use it, *volens volens*, in order to insure the requisite accuracy in their calculations; they therefore desire to be freed from the old incumbrances. The associated chambers of commerce have unanimously petitioned Parliament on the same subject. We subjoin one or two clauses of this petition:

“That even the weights and measures authorized by law in the United Kingdom are found to be most inconvenient for the various purposes of trade and social intercourse, on account of their cumbrous division, the great waste of time they entail in calculations, the liability to error they produce, and the want of homogeneity in all their parts.

“That the metric system being established on a scientific basis, and having been found exceedingly well adapted for all practical and scientific purposes, and admitted in many countries of Europe and America with unexceptionable advantages, has the best recommendation for its adoption in the United Kingdom, and, in the opinion of your petitioners, is likely to produce a decided boon to the whole community.

“That having regard to the increased intercourse with the continent of Europe likely to ensue in consequence of the treaty of commerce recently concluded with France, from the reduction of postage, and from the abolition of passports, it is all-important that the weights and measures employed in international transactions should be assimilated as much as possible in all countries. That, in the opinion of your petitioners, this is a most favorable opportunity for commencing the change, the public mind in this country being now sufficiently prepared for it,” &c.

Many other arguments might be urged in favor of the proposed change,

(among them not the least is, the solid advantages that education, both commercial and scientific, would derive,) which our want of space forbids us to notice. Finally, however, a bill has passed in the last session of Parliament, entitled "An act to render permissive the use of the metric system of weights and measures, 29 July, 1864." It is to be hoped that the subject will not be set at rest by this act, (or we shall have made a transition from bad to worse,) and that in the mean time all will avail themselves readily, whenever the occasion presents itself, of the new concession. We ought likewise to assimilate our terms and symbols as much as possible to those employed on the continent, so that the same word, or the same symbol, may express the same meaning here as there; otherwise we shall still remain isolated, not only physically, but morally, as heretofore.

Et penitus toto divisos orbe Britannos.

The language of science ought to be universal, and to be so it should be synonymous; so should that of commerce likewise. But in consequence of our forgetting this precept, and neglecting to assimilate as much as possible our technical terms and symbols to those of the rest of Europe, our men of science are comparatively unknown, even in France, and their works are not sought and appreciated as they ought to be if greater uniformity were observed. As a general rule, a comma is used on the continent to separate the parts of a decimal number. The comma is also used, as with us, to separate thousands in whole numbers; but this occasions no ambiguity, as may be seen at once on referring to a French statistical paper. Whereas, by employing as we do the period (.) in the middle of a decimal number, we may cause ambiguity to foreigners; they may even suppose we are using duodecimals. But this is of minor importance compared to the glaring anomaly of using the word cipher as synonymous with zero, while the rest of the world understand cipher to mean (what Dr. Johnson defines it in the first definition) "an arithmetical character—a figure." We use the verb *to cipher*, properly, and *ciphering*; then why not the noun? If we wish to be readily understood by our continental neighbors, than which nothing is more important in every species of commerce, we should at least employ their own words, or words of the same etymology, synonymously.

Hitherto we have said nothing about the coinage of France, although the new system would have been incomplete if this important matter had been omitted. The French monetary scheme, therefore, forms an integral part of the metric system. The fundamental unit is the franc, which is a coin of the weight of five grams, composed of nine parts of silver and one of copper. The subdivisions are the decime, ($\frac{1}{10}$ of a franc, or 10 centimes,) and the centime, ($\frac{1}{100}$ of a franc.) In the permissive act of last session nothing is said about decimal money, and yet the introduction of decimal coinage into England interests Englishmen directly and foreigners indirectly, quite as much as any part of the metric system. Our time and space being exhausted, we cannot now enter on this momentous question.

It ought not to be necessary to add a single word to this admirable and complete article. But as this department aims to introduce its system of estimating the annual amounts, acreage, prices, and value of the principal agricultural crops, and the annual amount, numbers of the different ages, price and value of farm stock, so that the world may know its annual production before commerce and manufactures lay hold of this production, it is necessary that, for the full accomplishment of such mutual action, the agencies for expressing these amounts, prices, and values should be common to all. The writer of the above article justly remarks that physically and morally Great Britain has been isolated from the continent by reason of its weights, measures, and coinage. So has the con

continent of Europe been kept from us by the same cause. Foreign statistics are unknown to us, because of the almost impossibility of rendering them into our own weights, measures, and values. The difficulty is a two-fold one: First, in determining the foreign values; and, second, in reducing them to our own. We have pointed out the impossibility of determining what an English bushel is, and have often, in these reports, referred to the uncertainty of the English quarter, whether it is 8 bushels of 60 pounds each, or of 70 pounds, or of some intermediate number. And if any one will look at the fractions of a whole number that are always found in foreign values when represented in our own, they will see the endless labor in calculations, such as are necessary to show in our own the weights, measures, and values of foreign productions. In giving the German scheffel we see that it requires five units to express it. The multiplication of so many numbers is so tedious that we are forced to abbreviate, as we did in our recent table exhibiting the annual products of Austria. This abbreviation but approximates to the actual amount or quantity. The foot, the square foot, all other measures, weights, and values, present a like difficulty, and rather than encounter them we all must be content to remain in ignorance of the productions of those nations with whom we trade, or who come into competition with us in the markets of Great Britain and other countries.

The writer of the foregoing article justly characterizes the French metric system as a "luminous" one. In its capacity and simplicity it is nothing less. It is an emanation worthy of the French Academy, and of Laplace and his co-workers. It is worthy of all praise in its purpose; not a French national system only, but designed for an international one, and most worthy to be adopted as such. England was invited to co-operate, but, just like her, she did not do so. Half-way measures are characteristic of her modern action, as is seen in the "permission" and not "enforcement" of the metric system.

The adoption of this system by the United States would compel that nation to enforce it at home; and, as already remarked, its adoption by the three greatest commercial nations of the world would insure its adoption by all others. Then, indeed, Arabian numerals would be an international form of statistical speech; now they are not.

But one of the great merits of the metric system is its decimal basis; and as the United States has recognized that basis in its money coinage, consistency demands its application to weights and measures. And another excellence, equally as important, is the relation that exists between all its parts. All spring from the metre, and hence, without changing it, no modification can be made of the others, as is often done, by local caprice or custom, with existing weights. It is a system that cannot be dovetailed with other systems; and this is a third great merit. Hence, when once adopted, it must remain not only national, but international. It cannot be amended by stupidity, thinking it is bettering it. There is not an objection that can be urged against it; and there is none, except that the names it uses are uncouth to unlearned ears. This is not so, even to the unlearned; for have we not thermometer, hydrometer, chronometer, gas-meter?—being from the Greek *thermos*, hot; *hudror*, water; *chronos*, time, and

metron, a measure—that is, instruments measuring heat, moisture, time, and gas. We have numerous other words derived from Greek and Latin; as anthracite, from *anthrakitis*, like coal; petroleum, from *petra*, rock, and *oleum*, oil. In the choice of the Greek and Latin names the French showed their good sense; for an Englishman would have stuck in some English names, and thus confounded the English weight or measure in use with the new system. To cut loose from all such “entangling alliances” was most sensible; was, indeed, the only proper course to pursue. The French left their old names just where they should be placed, in the past; and it is as easy for an American or Englishman to learn the new names of the metric system as it was for a Frenchman. To assert the contrary is to declare the former inferior to the latter—an assertion not to be allowed, at least so far as relates to the American. As to the Englishman, we can regard him only through the acts of Parliament on the general subject of weights and measures, and the *permissive* action relative to the metric system. These acts have all been honored more in their breach than in their observance, and the result is a confounding of what already was an inextricable labyrinth. But we feel too much indebted to Mr. Spear, the English author of the above article, to complain of that stupidity which so unreasonably rejects the metric system. And prudence, too, suggests as light censure as possible, seeing that we too may remain wedded to our present absurdities.

We do not suppose that Congress will have the least objection to the metric system, but the difficulty that may cause it to hesitate in adopting and enforcing it will arise from the annoyances caused by such enforcement. These are inseparable from all changes, but they rapidly pass away, and leave in their stead a hearty rejoicing over the success of the reform. It was so with the reform in our coinage. The act of Congress swept away the $6\frac{1}{4}$, $12\frac{1}{2}$, 18, and 20-cent pieces of foreign coinage, and substituted the dime and half dime. And who does not rejoice? Our currency is national now; it truly represents the decimal system. All business transactions quickly and easily conformed to the change. So it would be with weights and measures. If Congress would fix a day eighteen or twenty-four months in advance when the metric system should be practically observed, all persons would inform themselves concerning it; it would become a topic of newspaper information; every arithmetic would have the tables founded on it, and every commercial college would teach it. Scales, weights, and measures would be formed from the standards furnished by Congress to the several States, and the country in this way would cast off the present unsystematized weights and measures, and glide into the practical workings of one of the most complete, capacious, and simple systems that science has given to the world. Following this home reform would be a like international advance, sweeping away the difficulties that now interpose between the nations of the earth making known to each other the statistics of their wealth and annual production, their commerce and social condition. If these great and much-needed reforms do not prevail against all objections to the change, we will be much deceived in our estimate of the intelligence of the public.

THE CASTOR-OIL BEAN.

Mr. Levi H. Whitney, of California, has placed before us some interesting facts relative to the manufacture and cultivation of the castor-oil bean. At present neither the manufacture nor the cultivation is extensive, for heretofore the oil has been used almost solely, if not entirely, for medicinal purposes. But we think, if the bean was grown cheaply, that use would be extended to many more purposes, and thus, with a more extended use, would be found a correspondent increased demand for the bean.

Having seen a statement in a California paper that the castor-bean plant was perennial in Los Angeles county, and grew to the thickness of a man's thigh, we have been led to suppose that with this climatic advantage that State might add this bean to the number of its peculiar products. Nature has given to the cultivators of the soil a variety of climates, and as a consequence a variety of products. With these an interchange is created, and thus our vast agriculture, instead of a rivalry, exhibits in its sections a harmony advantageous to all. It is obviously, as a general rule, most wise for each section to grow those products peculiar to its soil and climate; and in the hope that the castor bean may be profitably made an article of growth, manufacture, and export in California, we proceed to give the information relative to its cultivation and manufacture which the courtesy of Mr. Whitney has placed before us, and which we have drawn from other sources.

1. *Character of the plant.*—The castor-oil plant is known by the name of *Palma Christi*, and grows in Asia, Africa, the West Indies, and in southern parts of Europe and America. In the temperate climates it is an annual plant, growing from six to nine feet in height, but in India it is perennial, assumes a woody character, and attains a height of forty feet. The seeds contain about forty-six per cent. of oil.

2. *Its cultivation.*—The site of the field should have a warm exposure, for we have seen the plant belongs to a tropical climate. It requires heat and warm suns to develop more completely the oil, and hence the soil should be rich, loose, and warm. These are also necessary from the fact that the plant ripens its seeds consecutively, like the bolls of the cotton plant, and the earlier it can begin maturing them the more profitable will be the yield. It cannot withstand frost, and frosted beans discolor the oil. Warming manures, that give the plant an early and vigorous start, are useful. In temperate climates good cultivation, as regards ploughing, harrowing, and tending, are necessary, because all these push forward the plant to an early maturity.

The planting should not be until the danger of frost is past, because it is easily killed by frost. As the seed is slow in sprouting, and it is desirable to have it come up quickly, it is soaked about twenty-four hours in warm water, which is first poured on the beans nearly boiling-hot, and then they are allowed to remain in the water until taken out at the end of this period. The planting

is done in rows, five or six feet apart, and a space should be left for a cart in which the seed is to be gathered when ripening. Some earlier crop should then be grown in this row, so that it may have matured when the bean is to be gathered, which is about the 1st of August. At this time the spikes of seeds begin to ripen, and continue until frost. The length of the cultivation must be determined by the season, but the ground should be kept clean, loose, and moist until the end of the ripening season. The cultivator should not be stopped too early, as it so often is in corn and other crops.

A bushel of seed will plant about fifteen acres, and the planting should be thick enough to insure a good stand. The cut-worm is hard on the young plants, and allowances should be made for its depredations.

With these general remarks relative to cultivation, we pass on to some miscellaneous matters, interesting in themselves, useful to the cultivator, and introductory to what will be said relative to the manufacture of the oil. These matters are embodied in the following letter to Mr. Whitney from William Addison, of Randolph county, Illinois:

LETTER OF MR. ADDISON.

SPARTA, RANDOLPH COUNTY, ILLINOIS,

October 30, 1865.

SIR: On the 28th instant I came in possession of your letter of the 18th instant, addressed to my friend, Hon. J. P. Reynolds, of Springfield, Illinois, on the subject of the castor bean (*Palma Christi*) and the manufacture of the oil. At his request I proceed, as best I may, to answer yours.

With your letter I also received enclosed three sample varieties of castor beans. Of these the *smallest* variety is that cultivated here to be used in the manufacture of the oil. The large red bean, or West India bean, as it is called here, when acclimated, yields more oil per bushel of beans; but, though large in size, does not yield so many bushels per acre, and therefore, though frequently tried by the farmers, its cultivation has always been relinquished for the small gray bean.

I will now endeavor to answer the questions in your letter *seriatim*.

1. Are they grown in Illinois now, and to what extent?

This county, (Randolph,) and probably in the adjoining counties, has been and is still the principal locality of their culture. The amount greatly fluctuates. This season they have been raised around here to the amount of at least 20,000, and it may be 30,000, bushels. I have never known them grown for oil further north than the next and adjoining tier of counties north of this.

2. What is the usual product per acre?

From *ten to twelve* bushels is a good average crop, though I have known from *fifteen to twenty* bushels frequently, and have certificates of from *twenty-five to twenty-eight* bushels. A great deal depends on the season, as the plant is very tender and stands no frost. A fall of the thermometer to 32 degrees ends its growth, and should they get frosted before the beans are gathered, such frosted beans color the oil and spoil it for medical purposes.

3. What are they generally worth a bushel?

They have been sold here at 25, 37½, and 50 cents per bushel, and a few years ago from 75 cents to \$1 was regarded by farmers a fair price. Lately the cultivation was neglected, as farmers found raising winter wheat more profitable. The war increased the demand for the oil, and the tariff of one dollar per gallon on its importation raised the price, so that in 1864 the price per bushel ranged from *two to three* dollars. This fall (1865) the price started between *three and four* dollars, and, although the crop is good, within the past three weeks many thousand bushels have been sold here for \$5 to \$5 60.

4. Is there any manufactory of the oil in Illinois now, and what is the usual product of oil per bushel of beans?

This town (Sparta) was formerly the headquarters of castor oil manufacture in this State, three or four parties being engaged in it and having presses. There was a press in Chester our county seat, and one at Fairfield, the county seat of Wayne county, east of this and nearly on the Wabash river, where the bean was grown to some extent. These were all screw-presses worked by horse-power, and the yield was, according to the quality of the bean, from 1½ to 2 gallons per bushel. For six or eight years past these oil presses have *all* ceased

to operate, and the manufacture of castor oil in the western country has of late years centred in, if not been confined to, the Collier White Lead Company and O'Fallon & Co., St. Louis, Missouri. These are very wealthy companies, with powerful hydraulic presses, steam-power, and the most approved machinery. There is also one other firm in St. Louis with less powerful machinery. The companies, with their powerful apparatus, may exceed *two* gallons a little, but that is a good yield.

5. What time should the seed be planted, and when will the bean mature?

As early in May as the warmth of the soil and season will permit. The first pods, in a good and forward season, will be ready to cut about the second week in August, and from that time until frost the plants keep blooming, fruiting and maturing. The farmer must watch and cut as the beans mature, as the pods, when ripe and brown, burst open, and the seed pops out and is lost in the field.

6. At what price per gallon for the oil can the beans be grown in Illinois at a profit?

This question involves so many other points, such as the price at which labor can be hired, the comparative value of other products, &c., that I will not attempt to answer it, but leave you to form your own estimate from the data given you above. One thing is certain: from the high price at which castor beans now sell, there will be a very great breadth of them planted next year in this locality, though many farmers, from the present high price, will sell what should have been reserved for seed.

From the high esteem I have for Mr. Reynolds, I will endeavor to find leisure to furnish you any other information on the subject I can, should you desire it. Henry T. Blow, member of Congress from St. Louis, is a principal of the Collier Company, and would, when in Washington, give you information.

I remain, most respectfully, yours,

WILLIAM ADDISON.

LEVI H. WHITNEY, Esq.

As this article has in view more particularly the introduction of the cultivation of the castor plant in California, we remark that, according to Mr. Simmond's work on the Commercial Products of the Vegetable Kingdom, in some tropical climates it is in constant bearing, and yields 100 bushels per acre. In the Technologist the same writer states that two varieties are grown all over India—one having a small and the other a large seed; the former yielding the most valuable or medicinal oil—the latter a dark oil, commonly burnt in lamps.

The beans are gathered by cutting off the spikes as fast as they turn brown, and carting them to a place enclosed with a high close fence or sides. There, as they ripen fully, the pods burst open, and in doing so the beans are thrown from the pod with considerable force. The sides secure them from being lost. The pods should be turned over occasionally, so that this "shelling" may be completed; they are finally raked from the beans, and the latter cleaned of dust or dirt by being run through a fanning mill.

3. *The manufacture of the oil.*—We have learned of but one other manufactory of the oil in the United States than those referred to in the preceding letter—it is that of H. J. Baker & Brother, in New York, of the Gowanus Chemical Works. This firm imports the castor bean from the East Indies—how many bushels we do not know; but it must be a large importation, from the fact that, although the war has ceased, yet we find that the price of the bean in Illinois has advanced this fall nearly two dollars per bushel, occasioned, as we understand, from the fact that the castor beans collected by this firm in the East Indies have been destroyed by a cyclone, or tempest peculiar to that country. The residuum of the bean, after the oil is expressed at this manufactory, is about 1,200 tons annually, which would make their importation of the bean somewhere about 75,000 bushels, yielding at least 150,000 gallons of oil; but of these statements we have no certain information.

If the amount manufactured in St. Louis is equal to this, then there are about 300,000 gallons of oil made in the United States. Its present wholesale price, at New York, is \$3 55 per gallon; but this price may have been thus large from the failure of the usual import of beans.

We have no information of the mode of manufacture. We suppose that it is a secret with the manufactory in New York, from the fact that visitors are not allowed to examine the machinery; we must, therefore, have recourse to books, and from them the following statements are given:

1. *The mode of manufacture in India.*—Mr. Simmonds, in the Technologist, states the mode in India, which we here condense.

The fresh seeds, after cleaning, are slightly crushed between two rollers, and then by hand the husks and colored grains are separated; then they are placed in clean gunny, and slightly pressed in an oblong mould, giving them a uniform shape and density; they are then placed in the ordinary screw or hydraulic press, with plates of sheet-iron between the layers; the oil is received in clean tin pans, and one pint of water added to the gallon, and boiled until the water is evaporated; this separates the mucilage, albumen, and oil; the first incrusts the bottom of the pan, the second forms a white layer between the oil and the water: care must be taken to remove the pan from the fire when the water is evaporated; the oil is then filtered through a blanket or American drill, and put into cases for exportation. Clean seed yields from 47 to 50 per cent. of oil, valued in England at 8 to 12 cents per pound. 980 pounds of kernels and 488 pounds of raw oil are obtained from 1,400 pounds of seed.*

In *hot pressing* "the seeds are boiled two hours in water, dried for three days in the sun, freed from the shells, pounded, and then boiled in fresh water until the whole of the oil has risen to the surface. $3\frac{1}{2}$ pounds of seed yield about one quart of oil."

2. *The mode of manufacture in Jamaica.*—The seeds are slightly roasted to coagulate the albumen, cleaned of the shells, bruised, and boiled in pure water. The oil rises to the surface and is removed. 10,000 parts of clean seed give in this way 2,250 parts of oil of a good quality.

3. *The mode of manufacture in the United States.*—"According to the American Dispensatory, the clean seeds are gently heated in a shallow iron reservoir, to render the oil liquid that it may be more easily pressed out in a powerful screw press, when a whitish oily liquid is obtained. This is boiled with water in clean iron boilers, and the impurities skimmed off as they rise to the surface. The water dissolves the mucilage and starch, and the heat coagulates the albumen, which forms a whitish layer between the oil and the water. The clear oil is boiled with a minute portion of water until aqueous vapors cease to rise; in this way the oil is rid of an acrid volatile matter. The oil is then put into barrels."

Other accounts state that the oil is pressed in the United States between heated plates.

4. *The castor oil cake.*—We have stated that the firm of Baker & Brother, of New York, makes about 1,200 tons of castor oil cake annually. This we learn is sold at about \$30 per ton, and is used extensively as a manure in

the growth of tobacco in Connecticut, the excellence of which is in part attributable to this fertilizer; it renders the soil very friable. Its value as a fertilizer may be seen from the following table of its analysis compared with the rape cake of England :

	Ash of castor bean.	Ash of rape-seed.
Silicious matters.....	1.96	1.18
Phosphates.....	3.36	3.87
Excess of phosphoric acid.....	0.64	0.39

THE INTERNATIONAL INDUSTRIAL FAIR AT PARIS IN 1867.

International fairs must now be regarded as established institutions, for the vast good they have already accomplished has commended them to all. Every person will remember the important results which followed the private exhibition of manufactured goods by Mr. Cobden to Napoleon III; in the same way, but to far greater extent, do these international fairs make known to all nations the peculiar industrial superiority of each one. What has been done by our State fairs in introducing superior machinery and improved methods of production, both on the farm and in the manufactory, among the counties, is in process of accomplishment among the different nations. The industrial progress of a people is becoming the noblest part of its history. These international exhibitions make up an important record of each nation's progress, but it is one heretofore too much neglected by the United States. Our internal trade is so great that to meet its requirements has been the chief aim of our industry. The capabilities of that industry are now recognized as almost unlimited, for the recent war made a demand upon them that neither ourselves nor foreign nations supposed us competent to meet. The peculiar circumstances of our condition have developed our industrial energies to a degree unknown to any other people. It is due, therefore, to ourselves and to the world's progress that we should make international whatever these circumstances have created among us. And this cannot better be done than by an exhibition of our industrial attainments in the international fairs. Whatever we have exhibited has given us honor, and, what is better still, has greatly contributed to the common interest. Witness our reapers and mowers. The rotary digger will press closely on the footsteps of these. Our ploughs are sought after in Germany, as we see from the letter of Mr. Klippart, published in the August report. "American ploughs," he says, "are much liked, and very popular in Saxony, but not the hundredth part of the demand can be supplied. John Bull has endeavored to supply this market, but the Germans very much prefer the American ones. Then our spades, manure forks, pitch or hay forks, and even down to household implements and tools, are sold as rapidly as they arrive, so that no stock remains on hand." Like remarks can be made of other branches of our industry. The success of

the entomologist of this department at the recent fair in Paris but indicates the wide field of successful competition that is opened to us by these international fairs. Our pride, our interests, and our duty demand that we should enter into and occupy it.

Heretofore this has not been done for the reason that we have simply neglected to make the effort. And this neglect is much to be attributed to the fact that no systematized arrangements have been entered into having in view a permanent co-operative action between the general government, the State governments, State agricultural societies, county societies, committees and individuals representing the different industrial pursuits. What, therefore, should be done is the passage of an act on the part of Congress prescribing the manner in which all these should unite in this concurrent action. It should be a permanent act, not for the coming international fair at Paris only, but for all future like fairs. Once at well-working, such an act would ever secure an exhibition of American industry worthy its greatness and our position among the nations of the earth.

These remarks have been suggested by the following letter, written by Professor Richard Owen, of Indiana State University, a gentleman whose high scientific attainments and familiarity with the French and German languages well fit him to represent our country in any commission that may be sent on its behalf to the French Exposition :

INDIANA STATE UNIVERSITY,
November 19, 1865.

DEAR SIR: A few days since I wrote to the governor of this State, saying that I thought the mining interests of Indiana, as well as its agriculture and manufactures, ought to be represented at the industrial exhibition at Paris, and offered to do all I could towards inducing persons in this State to send slabs of marble, lithographic stone, iron ores, &c., and myself to make up a well-labelled suite of specimens of Indiana paleontology. Our legislature, I remarked, I thought ought to meet the expenses of sending specimens to the Atlantic seaboard, where, I understood, the federal government assumes all charges and responsibility. The specimens sent by Indiana, and representing her mining facilities, might be presented to one of the public museums in Paris. I have no answer yet from the governor, but I see he has recommended something of the kind in his message issued on the same day I wrote, consequently before my communication reached him.

Thinking further on the matter, it seems to me that many might participate, and send various objects of interest to the capital of their respective States, which objects would really serve as a standing advertisement of the raw material or manufactured articles, &c., of the contributors, and at the same time reflect credit in foreign countries upon that State, and call the attention of emigrants to its resources. Perhaps some persons might never think of engaging in this undertaking unless special attention were called to it, and some definite method pointed out by which it could be effected. It occurred to me that the valuable issues which emanate periodically from your department might call attention to this subject and suggest a few details.

Perhaps the States might be induced to make some appropriations, and individuals might be called upon to box up and send to the capital of their State well-labelled samples of metallic ores, of marbles, coals, clays, &c., and scientific men might be induced to contribute fossils, suits of land and fresh-water shells, possibly a *hortus siccus*, a collection of the different kinds of wood, exhibiting bark, longitudinal and transverse sections; and fishes, reptiles, mollusks, &c., might be put up with alcohol in the same cans used for fruit, say half-gallon size, and then boxed. The New Jersey horse-crab would no doubt be an object of interest there, although so common with us; also the saw-fish on the coast of Georgia, the corals of Florida, &c.; and many other similar objects of natural history, such as the prairie dog from Colorado or New Mexico, which could be sent by express. I might also mention the cocoons from the alanthus silk-worm, &c.

Agriculturists might contribute samples of grain, (corn, wheat, barley, oats, rice, buckwheat, &c.;) of wood, cotton, flax, hemp; of fruit, perhaps canned, if in no other form; also some fine vegetables, starch, malt, cider, wine, sorghum molasses and sugar, maple molasses and sugar, cheese, honey, beeswax, tobacco, walnuts, pecans, cranberries, per simmons, &c.; also domestic manufactures, as linseys, quilts, socks, &c.

Manufacturers might send such articles as linseys, jeans, blankets, native silk goods, cutlery and hardware, saddlery and carriage trimmings, leather, glue, isinglass, (native,) pottery, furniture, jewelry, specimens of printing and book-binding, perhaps something in the way of the fine arts; also chemicals, such as pyroligneous acid, coal oil, coal-oil lamps, lard oil, stearine, (soap and candles,) essential oils, Canada balsam, pine resins, (tar, rosin, and spirits of turpentine,) concentrated milk, and the alkaloids from dogwood, willow, (salicine,) &c.; rubber and gutta-percha goods, surgical instruments, musical instruments, articles of dentistry, and the like.

Undoubtedly there are many more articles which will suggest themselves when the subject is fairly agitated, and that which seems chiefly wanted is to give the first impulse. Hitherto we have failed to occupy more than a fraction of the space assigned to us at similar exhibitions.

I was much interested in the communications contained in the last number of your monthly report, regarding the entomological exhibition and the items concerning the cattle plague.

I am, very sincerely, yours,

RICHARD OWEN.

A JUST VIEW OF PUBLIC INTERESTS.

No one can read the following letter without admiring the public spirit of the writer, and conceding that the views he expresses are as just as they are broad and comprehensive. The climate of California is so different from that of the Atlantic States that its products should not come into conflict with those grown here, but the trade should be directed into channels wherein a profitable interchange might be made its basis. Thus, although wool is grown in both sections, yet that of California does not compete with that produced here, but conflicts with that of South America, and of other foreign countries having the dry summer climate of the trade-wind region. But this climate is best adapted to the growth of certain products, and, as often stated in these reports, it is better that the agriculture of California should be directed to the products peculiar to its climate. The writer of the following letter evidently takes the same view, and believes that State will have its interests best subserved by properly making known the character of its peculiar products. The United States consumes large quantities of the productions of similar climates—why shall California not supply this consumption?

The museum of the Department of Agriculture has in view, as one of its chief objects, the exhibition of every product peculiar to any State or Territory, and hence no better way could be selected to make them known than by forwarding samples to the Commissioner of Agriculture. Samples should be properly labelled, carefully packed, and sent by such conveyance as is best suited to the articles sent. Freights are always paid by the department.

In regard to wines, brandies, and other liquors, the chemist of the department will give them a careful analysis, and the results published in these reports. They will be subjected to such tests also as referred to in the following letter, and samples placed in the museum with a brief notice of their peculiarities. Statements should accompany the samples, giving the character of the soil, cultivation, and climate; the yield per acre, mode of manufacture, ports where shipped, &c. Where specimens of the soil can be forwarded it should be done, for these would be analyzed also, and thus, in time, the peculiarities of each vineyard and locality be made known, as well as the character of each kind of

grape, and as it is modified by soil, climate, and cultivation. A country that grows out-doors both American and European grapes, and where the vintage is, in some localities, as high as one thousand gallons per acre, must become the wine-producing State of the Union, and successfully compete in foreign ports. We concur, then, with Mr. Denver, that it is exceedingly to be regretted that the variety and extent of the wine and brandy product of California are not properly set before the eastern public. Wines purporting to be from that State have been sent to the department as genuine, but the analysis of the chemist showed they were not. It is, therefore, important to the interests of that State that its wines, brandies, and other peculiar products should have a place in a museum that is already visited by persons from every part of the country, and the number of whom will but the more rapidly increase in proportion as its interest and utility are increased by the addition of articles such as is proposed to be sent to it by the writer of the letter below. And what is here said of California applies to all other States and Territories.

SAN FRANCISCO, November 7, 1865.

DEAR SIR: Several years since I sent you some tree cotton seed from Tahiti. I intended to have continued sending such other seeds of foreign growth, of probable value to the United States, as I might from time to time procure, but absence from the city has prevented me from so doing.

Having returned, I now propose to send you samples of such nuts and semi-tropical dried fruits as are grown in California, hoping, through them, you may have practical proofs of the capabilities of our soil and climate, and thus acquire a more accurate knowledge of the vast agricultural resources of California. I am in a great measure induced to do this, as, from practical knowledge of the workings of some of the agricultural societies in this State, I feel assured that your only sources of information will be through private parties, and not associations.

I send you by this mail, per steamer, a package of English walnuts, or Madeira nuts, grown this season near Los Angeles, California, and enclose you memoranda concerning the same from Mr. Addison Martin, of this city. I also send a package of peanuts, with memorandum concerning them, from the same party. The latter nuts are of two kinds, the larger sized ones having been raised in California as per memoranda, and the smaller variety in the Sandwich Islands, of which I have no account.

I hope in a few weeks to be able to send you samples of almonds, (both hard and soft shell,) raisins, and figs; also samples of the various kinds of wheat, barley, and other small grains; cotton, and its seed; leaf tobacco, and seed; and, if opportunity offers by private hand, send you samples of oranges, lemons, citrons, and olives, and silk-worm cocoons, all of California production, with such memoranda of information connected with each as I may be able to gather.

I regret exceedingly that the task does not devolve upon some more competent person; one practically acquainted with agricultural matters, who therefore could write from personal knowledge.

In the absence of such party or parties, my desire that California's agricultural wealth shall not be overlooked in the eastern States prompts me to do what lies in my power to make good the deficiency. In this State we have a variety of soil and climate not to be found in a similar extent of territory on the rest of the globe, and were proper advantage taken of the same the United States could in a few years dispense with the importation of many millions annually of what are now termed foreign products, which could be raised of as good quality and as profitably here as elsewhere.

Among these articles are wines, (of all kinds,) brandy, olive oil, raisins, figs, citron, almonds, walnuts, linseed, mustard, and silk. Of some of the above California is capable of not only supplying the entire home demand for the United States, but could profitably export some of them to foreign markets.

The only way that I can bring these things practicably before your department is to send you samples of such of these articles as the facilities of the mail will admit, and others by reliable private parties who may consent to take charge of them and see to their safe delivery in Washington.

I regret exceedingly that the variety and extent of our wine and brandy product are not properly set before the eastern public. I feel assured that a correct representation of the same in samples, if exhibited in Washington or some one of the large Atlantic cities to a compe

tent committee of judges, would annually be worth hundreds of thousands of dollars to California by increased orders and the investment of additional capital in exporting wines to eastern markets.

Could some guarantee be made by the Department of Agriculture that samples of wine produced in California would be exhibited in Washington to well-known competent judges, and the opinions of the same upon the merits of the different wines and brandies tested be published officially in the Agricultural Reports, I think a representation of vintages and qualities of wine and brandies would be sent as would astonish the people of the eastern States. I hope the department may favorably consider this suggestion and act on it, giving proper time to enable samples to be sent to place of exhibition.

While on the subject of fruit I wish to state that the olive grown in California at present is the French olive, of small size. The large Spanish olive could be grown equally as well, and prove more productive.

Yours, truly,

HORACE D. DENVER.

Hon. ISAAC NEWTON,

Comm'r Department of Agriculture, Washington, D. C.

THE PACIFIC STATES AND TERRITORIES.

The remoteness of the Pacific States and of the States and Territories on the Rocky Mountain slopes requires a change in the mode of collecting the statistics of their crops. It is the intention of the department to issue a circular every third month only to the correspondents in these States and Territories, for this time will give ample opportunity for the department to receive all the returns, and thus, in every quarter, the condition of their agriculture may be fully presented. As it now is, many correspondents do not return the circulars, because often they do not reach them until some time after the return day. Mails are irregular also between the seaboard and the interior of the Pacific States, and the mails to the Rocky Mountain offices are often delayed. This department must conform its action to these impediments. Besides, this change will better enable our correspondents to prepare full letters to accompany their reports, which have always been both useful and interesting, for they speak of an agriculture so different from that of the Atlantic States that this difference is attractive to all.

CALIFORNIA.

The returns we have received of the harvests of this State show a considerable gain over last year's crop; but as that crop was a failure, almost entire in some counties, but comparatively small in others, it is difficult to determine the excess of the present crops over those of last year. Prices are low at San Francisco, in the presence of a fair export demand, and these would, therefore, indicate an abundant supply. The values in the following prices are gold, and not currency. In the middle of November flour was selling from \$6 25 to \$7 per 196 pounds; wheat, 2 cents per pound; barley, 1 cent; oats, 1½ cents; corn, from 1½ to 1¾ cent; rye from 3¼ to 3½ cents; buckwheat, same; beans from 2½ to 3½ cents, and hay from \$12 to \$15 per ton. Taking into consideration the cost of labor in California, and the cost of the seed sown, these prices are not satisfactory. Hence we find the farmers holding back. The Mercantile Ga-

zette of San Francisco of the 17th of November says: "Farmers appear to be more than ever determined to hold back their wheat for a future market." The returns we have received do not indicate a crop so large that, in the amount produced, the California farmer would find compensation for these moderate prices.

The following item will show to our Atlantic broom-corn growers an opposition we did not expect:

"The Black Hawk, for Boston, says the Gazette, carries 857 bales; other shipments have been made to New York, the whole aggregating about 100 tons. The ruling prices for broom-corn are from 2½ to 7 cents per pound—averaging 5 cents per pound."

OREGON.

The few returns which have come to hand do not indicate that the harvests have been so small as we were led to expect they would be by previous reports. But the returns differ much in the different counties, and as most of them are not reported, we cannot say what the crops are generally.

The following extract from a letter written October 24th by our excellent correspondent at Salem, Mr. David Newsom, shows that the peculiar weather which marked the season over the Atlantic slope was experienced at Oregon also:

"I would here state that this season still continues altogether different from any other one which we have had for twenty-five years past in the Willamette valley. The rains set in here August 22d, and continued with short intervals for *forty* days. Much wheat and oats were partly or wholly injured thereby, throughout this entire valley. But the inestimable benefit to the country at large on account of those heavy warm rains more than counterbalanced the injury to the grain crop. The earth soon became moistened, and fall ploughing and seeding became general; large crops are being well put in, and fall pastures are a hundred per cent. better in this entire valley than ever before. The small grain growing looks unusually well—health is good, and all nature looks reanimated. On the 29th September the clouds cleared away and the sun ever since has shone with great brilliancy and warmth, and we have the temperature and green freshness of May. In consequence of foreign demand for our surplus grain, speculators bid \$1 per bushel for wheat and 50 cents for oats. We have a moderate surplus of grain on hand. The great failure of our hay crop will more than be made up by the fall pastures. The potato crops are very luxuriant now, and the yield is far better than we expected, particularly of late planted potatoes. Late planted cereals that survived the great drought are now yielding finely."

In an adjoining county, lower down on the Willamette, Mr. J. S. Griffin, of Hillsboro', writes as follows, on the 11th of October:

"As yet nothing is killed by frost, and many pieces of wheat are up and looking remarkably fine. June wheat is as large as is safe, lest jointing should start this fall. There are, perhaps, one-fifth of the farmers already in the habit of weaning colts and giving calves a fine start on June-sowed wheat. Stubble-fields are turned under in the fall, sown partly in wheat [spring, we presume] and oats, and the rest is again ploughed, deeper than the fall ploughing, and sown in wheat in June. This gives good fall pasture, and a good crop the following year."

These reports of the favorable state of the weather show the cause why the harvests are better than anticipated during the drought.

We cannot omit the following notice by Mr. Griffin of the Oregon Indians:

"The Indians of Umatilla have just taken the second premium at our State fair for vegetables, and the Nez Perces are a much more numerous tribe than any other of this coast. I was formerly among them as a missionary, and three years since I visited them again, and found the farms on which I had established their fathers now occupied by their sons, and raising better crops to the acre than most other farmers in Oregon. I desire you, through Rev. H. H. Spalding, Lewiston, Idaho Territory, to send them seeds."

UTAH TERRITORY.

Parts of this Territory have been injured the past season by frosts late in the spring and early in the fall. But the season has there been much like that of Oregon, very dry in the early part, and favorable in the latter part, from the rains then falling. The crops have differed in the various counties compared with those of last year. Thus wheat ranges from eight-tenths to eighteen, or from two-tenths less than last year's crop to eight-tenths more. But the general averages are about the same as last year.

From our correspondents we glean some matters of interest, as they show the peculiar agriculture of these elevated regions and dry summer climates. Mr. A. L. Siler, of Kain county, after describing the different settlements in his county, says:

"In all these settlements there is 12,560 rods of ditch for irrigation exclusively, and 400 rods of flume, which will average 18 inches wide and 12 inches deep. Their cost is \$46,065. The land watered by these is farmed as follows: In gardens, orchards, and vineyards, 220 $\frac{1}{2}$ acres; in corn, 256 acres; in wheat, 204 acres; sugar-cane, 151 $\frac{1}{2}$ acres; in cotton, 191 $\frac{1}{2}$ acres; in rye, 1 $\frac{1}{2}$ acres; in clover, 18 acres; in tobacco, $\frac{2}{3}$ of an acre. The yield per acre is, of corn, 27 bushels; of wheat, 10 bushels; of sugar-cane, 100 gallons; of cotton, 200 pounds; of rye, 15 bushels; of tobacco, 200 pounds. The clover is blue-flowering, and is cut three or four times in the season, and used for soiling. Corn is a certain crop, and is planted from the 1st to the 20th of June. It ripens about the 1st of October. Wheat is sown from the 1st of October to the 1st of February, and harvested between the 1st of June and the 15th of July. It is not a good crop. The corn is mainly consumed in bread, and sells at \$2 per bushel. Wheat sells at the same price, and a gallon of molasses brings a bushel of corn or of wheat. Cotton is the main crop with which to pay taxes and to buy necessities. The picking season lasts from 1st of September to Christmas, and the cotton is sold in small bales of from twenty to twenty-five pounds to pedlers and factory agents. Rye bids fair to be a leading article for bread; the seed is yet scarce, of a small, black variety. It is selling at \$3 per bushel. The climate is most excellent for all varieties of grapes, both foreign and domestic; it is easily propagated, and by watering the slip will grow, no matter which end is down. The growth of a vine in one season has been forty feet. Peach trees do well; the apricots grow luxuriantly. Apples are not so good, and the Irish potato does not do well. The first settler in the county came into it on the third day of December, 1858."

Such is the progress of agriculture in these distant places.

NEVADA.

Our returns from Nevada show a rapid increase in the crops. They fully sustain the remarks in the following extract from a letter written by our correspondent, Samuel Young, of Aurora, Esmeralda county:

"The past year the agricultural interest in this county has increased four-fold. The product of the seeds sent from your department has been most satisfactory; the carrots, in particular, being very smooth and abundant. Heretofore we have had spring wheat only, but the frost about the first of September injured what was not previously harvested, and this was fully one-half the crop. The winter wheat forwarded by you I shall distribute generally; it gives great satisfaction to the farmers. Seeds will be planted earlier the coming year, and the increase next year will be as great as of this year. The increase of horses, cattle, sheep, and hogs is from three to four-fold that of last year, and they are now owned exclusively by farmers, and not, as heretofore, by cattle-men and speculators."

NEW MEXICO AND WASHINGTON TERRITORIES.

Our returns are yet very meagre from the first of these Territories—too much so, to speak of its crops. The information from the last one shows that the season was very wet in haying time, and whilst it injured that crop very much, it was greatly beneficial to all other crops.

COLORADO.

We may make the same observations relative to the harvests in Colorado that we did in regard to Oregon. The early drought was unfavorable, and the grasshoppers were destructive. We gave an account heretofore of the singular cause of their destruction in turn—that an ichneumon fly deposited its egg in the grasshopper before it had wings, and that when the egg hatched within the body of the grasshopper the worm lived upon it, causing destruction to its life.

Our correspondent from Pueblo thus writes :

“When last I wrote to you the grasshoppers were eating everything before them, and the people were very much frightened, but through some special providence the grasshoppers were destroyed—all died in a few days—and there are now (October 12) some as fine crops as I ever saw in my life.”

From Pueblo, Mr. H. D. Moon writes, November 3 :

“The times are proving quite good, notwithstanding the injury from the grasshoppers last spring. There will be an average amount of corn raised this season, because the people exerted themselves and *replanted* all they could. The wheat and oats were nearly all replanted in corn, and frost held off until it nearly all matured. Our first frost came on the 6th of September, but did little damage. The first snow fell on the 18th October about one inch, and on the 26th about four inches, but it went off rapidly the next day, and now the weather is very fine here.

“No country was ever more quiet than this at present. No Indian troubles have happened since the Sand Creek battle, within three hundred miles of here. Nearly every man, woman, and child in this country will deny that it was a ‘*massacre*.’”

Mr. William J. Godfrey, from Conejas, writes :

“I would ask you to send me a bag of your best spring wheat—the earliest variety that you have. I make this request at the earnest solicitation of numerous Mexican friends. The wheat received from your department appears to be of the very best quality, and every possible attention will be given to it.

“Your Monthly Report for September has been received. The valuable information these reports contain has made them very popular in this portion of our Territory, and I am unable to supply the demand. The six copies received have already gone through sixty to seventy hands.”

From Fort Lupton Mr. Lumry writes, November 1 :

“There was considerable corn planted here after the grasshoppers had eaten up the wheat crop, and the season having been unusually warm, there has been a tolerable crop raised. This county is peculiarly adapted to the growth of small grains and vegetables, but the grasshoppers destroyed a large part of the wheat, and ate off the potatoes two and sometimes three times, yet there is at least one-third more potatoes raised than in 1864. The fields of wheat that escaped gave a large yield, and of excellent quality. Oats do well when sown late. Please send a good supply of your best varieties of seeds.”

THE CATTLE PLAGUE.

HOMŒOPATHIC TRIAL IN ENGLAND.

In the last monthly report we alluded to the success in the cure of the cattle plague in Holland by homœopathic treatment. In the Mark Lane Express of November 27 we find the following account of its trial in Norfolk, England, by which it appears this supposed cure has failed :

“At the meeting of the Norfolk Cattle Plague Association, on Saturday, Mr. Forrester made a lengthened statement as to the results which had attended the homœopathic treatment attempted by Mr. Moore. There was a difference of opinion as to the animals proposed to be placed on the trial register, but Mr. Moore’s objections were, at the utmost, against three animals only. Mr. Moore wished to have several animals put on the register, which Messrs. Smith and Wells objected to as not being sufficiently developed cases, but inasmuch as these animals were not thereby deprived of homœopathic treatment, the question of their recovery or death was not affected by the course adopted. It was to be regretted that Mr. Allen, in

the exercise of his discretion, had thought proper to kill his two cows which were placed on the register; but, after all, it did not affect the question at issue; the cows had been for a long time under treatment by chlorate of potash. Three other cows which were ill at Mr. Allen's were killed on the 16th and 17th, and five more had been killed since, one of which had been under arsenicum for a month. The others had also been killed. All Mr. Allen's cows had been under arsenicum. Of Mr. Reid's cattle, two cows and two bulls were put on the register on the 16th; one cow died on the 20th, and another on the 21st; one bull on the 18th, and the other on the 20th. Mr. Reid's stock had been 41 in all; one was killed, 38 had died, and two buds (those beginning to show their horns) were now convalescent. At M. C. Atkin's one cow was put on the register; the bull was thought to be sickening, but was not registered; both had been under homœopathic treatment by Mr. Buckenham, the inspector; the cow died on the 22d, the bull on the 23d. Nothing remained on the farm on the previous day (November 24) but ten grazing bullocks, one of which showed decided symptoms of rinderpest. At Mr. Carman's, of Weston, one cow was put on the register on the 16th, and died on the 20th; another cow which was ill on the 16th died on the evening of that day; of three other cows alive on the 16th, one died on the 23d, another was very ill on the 24th, and the other was convalescent, but the pulse was 84, and the respiration 32. Of ten young beasts two had died, and two were very ill. The stock on this farm had been tended carefully, and had been put under homœopathic treatment as they fell ill. At Mr. Savory's, Sparham, five bullocks, one bull, and three calves had died previous to Monday, November 20; seven others had died since; one had recovered; all were treated with homœopathic medicine. At Mr. English's, of Lyne, two of three cows placed under Mr. Moore's treatment had died. Two buds had died, and two spotted buds were now falling ill, and three calves and two cows were well. A letter was read from Mr. Moore, refusing to proceed further with the trials, on the ground that he had not had fair treatment. Mr. Forrester expressed his opinion that the treatment of animals after they had passed the first stage of the disease had resulted in failure. Lord Bury argued that the result was not conclusive, as Mr. Moore had only been a few hours in Norfolk. A London committee were ready to send down a staff of homœopathic surgeons to work the matter properly, but \$1,000 would be required for the purpose. Would the association find a portion of this sum? The matter was, after some discussion, referred to the sub-committee, and the meeting soon afterwards adjourned."

We may, then, still regard the disease as incurable, and must rely on *preventive* means to secure the living. Against the ordinary infectious diseases of farm stock, the Commissioner of Agriculture has found a mixture of pitch, brimstone, and assafoetida to be most efficacious, when rubbed freely on the stalls and the head of the stock. How far it might serve as a protection against the rinderpest can be determined by trial only.

RULES AND REGULATIONS.

The Secretary of State, with his usual courtesy, has sent to this department a long communication from Mr. Marsh, one of our consuls in Great Britain, relative to the report of the commissioners of that country upon the cattle plague. A part of this communication is the recent rules adopted by the government for the treatment of diseased animals, that the spread of the disease might be checked. It is not necessary to publish any regulation until its effect is proven to be good. We have given much attention to everything connected with this most fatal disease, as these reports will show, and we are satisfied that no regulations are effective for any good save those adopted by the western German nations: a rigid military cordon around every place where the disease shows itself; the slaughter of all diseased cattle, and all others coming in contact with them; the burial of the carcasses with quicklime; the burning of all things with which the diseased and dead animals have been in much contact; and a quarantine of all persons inside the cordon.

The British have adopted half-way regulations. The disease there is spreading wider and wider, and its fatality is undiminished. The *Agricultural Gazette*, of December 2, says: "The cattle plague appears to be spreading rapidly.

Deaths from it are taking place at the rate of nearly three thousand weekly, and it appears to be now more virulent and fatal in country districts than in towns."

SHEEP CONTINUE TO BE INFECTED.

In his testimony before the cattle plague commissioners Mr. Clayden, chairman of a cattle plague association in England, said:

"In our neighborhood, last Saturday three weeks, a man named Giblin, of Wethersfield, near Baintree, bought eighty sheep at Colchester market, of a man named Johnstone, and on the Monday following they arrived home. Five died immediately, and they kept dying until Professor Simonds was sent for. Other veterinarians were had recourse to, but they said it was not the cattle plague. Professor Simonds then reduced the lot down to fifty-four, and the other twenty-six he slaughtered as good for human food. They all died, and they died within eighteen days of being purchased. That has made us afraid of this disease. And to prove it was the cattle plague, a man named Raven, whose fields adjoin Giblin's, and where there was a brook not so wide as this table between the fields, had two cows, one of which took the disease and died, and the other he had killed; and another farmer in the same parish had the disease also from those sheep, as it was supposed, for the fields adjoined."

Such is the cattle plague. Congress has passed an act to prohibit the importation of cattle into this country. So far, very good; but what of Canada? That door is still open.

EXPORTS AND PRICES OF FARM PRODUCE.

Exports from New York of the leading agricultural products from January 1, 1865, to December 19, compared with those for the same time in 1864, and their prices in New York and Chicago.

Articles.	1865.	1864.	Prices Dec. 19, New York.	Prices Dec. 13, Chicago.
Wheat flour.....bbls..	1,374,503	1,899,933	\$7 00 to \$9 85	\$3 75 to \$11 00
Rye flour.....bbls..	2,613	2,840		4 50 to 5 00
Corn meal.....bbls..	125,549	103,446	4 65	
Wheat.....bush..	2,300,469	12,165,343	1 65 to 2 40	87½ to 1 43
Corn.....bush..	4,321,074	841,297	95 to 95½	43 to 45
Rye.....bush..	184,495	588		40 to 53
Barley.....bush..		150	1 00	40 to 1 30
Oats.....bush..	71,394	41,775	60 to 62	22½ to 27
Peas.....bush..	86,989	184,433		
Cotton.....bales..	200,432	26,744	50 to 52	
Hay.....bales..	35,230	39,257	70 to 85	50 to 60
Hops.....bales..	13,658	23,073	20 to 65	45 to 60
Leaf tobacco.....hhds..	84,517	89,639	8 to 22½	
Leaf tobacco.....pkgs..	78,342	69,774		
Manufactured tobacco.....lbs..	3,968,239	4,948,476		
Petroleum.....galls..	13,706,466	21,278,439	65 to 67	
Pork, mess.....bbls..	115,723	139,421	23 00 to 28 00	26 50 to 27 00
Beef, mess.....bbls..	38,852	36,061	14 00 to 17 00	12 00 to 17 00
Beef.....tierces..	49,054	49,299		
Cut meats.....lbs..	33,843,574	93,573,155	11 to 16	10 to 16
Butter.....lbs..	9,628,835	14,151,375	23 to 47	20 to 33
Cheese.....lbs..	40,517,193	49,490,831	15 to 18½	20 to 23
Lard.....lbs..	22,468,241	53,070,467	15 to 19	18 to 18½
Tallow.....lbs..	15,598,745	31,938,576	13½ to 14	12 to 13
Wool, fleece.....lbs..			55 to 68	43 to 50
Sorghum molasses.....galls..				50 to 60

RAILROAD FREIGHTS FROM CHICAGO.

The Chicago Journal of Commerce, from which we extract the following table, remarks in its issue of December 14 that these freights are unsettled and irregular. There is so great a complaint of excessive charges, that this table will, hereafter, be given in each of the monthly reports, that farmers may see what they are.

The rates are given for flour only. They ought to be given for wheat and corn also; for stock and barrelled meats.

In explanation of the different classes we remark, that when *time* is important, the shipment is by the *fast* lines, being class No. 1 or 2. Where it is not so important, the freights are sent by No. 3 or 4.

Freights by car-load—flour.

	First class.	Second class.	Third class.	Fourth class.	By 50 bbls.
To Toronto.....rail..	\$1 05	\$0 85	\$0 78	\$0 70	\$1 40
To Montreal.....do..	1 72	1 33	1 30	1 12 $\frac{1}{2}$	2 25
To Albany and Troy.....do..	1 85	1 45	1 33	1 12 $\frac{1}{2}$	2 50
To New York.....do..	2 00	1 60	1 45	1 30	2 60
To Boston <i>via</i> Albany.....do..	2 10	1 70	1 55	1 40	2 80
To Portland and Danville.....do..	2 10	1 70	1 55	1 40	2 80
To Philadelphia <i>via</i> Pittsburg.....do..	1 45	1 25	1 12	1 15	2 30
To Baltimore.....do..	1 45	1 25	1 12	1 15	2 30
To Cincinnati.....do..	80	70	60	65	1 00

METEOROLOGY.

NOVEMBER, 1865.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain, (in inches and tenths,) for November, 1865, at the following places, as given by the observers named. The daily observations were made at 7 o'clock a. m. and 2 and 9 p. m.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
MAINE.								
Steuben	Washington	J. D. Parker	17	56	12	6	37.2	5.84
Lee	Penobscot	Edwin Pitman	17	60	12	—2	34.8	3.70
West Waterville	Kennebec	B. F. Wilbur	17	61	12	8	36.4	3.40
Gardiner	do	R. H. Gardiner	17	65	12	10	37.1	3.24
Lisbon	Androscoggin	Asa P. Moore						4.15
Standish	Cumberland	John P. Moulton	17	70	8, 12, 29	20	38.2	3.74
Cornish	York	Silas West	17	68	12	15	37.1	7.98
Cornishville	do	G. W. Guptill	17	67	11	16	37.9	3.72
NEW HAMPSHIRE.								
Stratford	Coos	Branch Brown	17	58	12	2	33.1	1.67
Shelburne	do	F. Odell	17	66	12	7	36.9	1.00
North Barnstead	Belknap	Chas. H. Pitman	17	75	8	21	41.2	2.89
Concord	Merrimac	John T. Wheeler	16, 17	69	12, 29	19	39.6	2.88
Claremont	Sullivan	Arthur Chase	17	70	12, 29	18	38.0	3.20
VERMONT.								
Lunenburg	Essex	H. A. Cutting	13	58	9	14	34.6	2.95
Craftsbury	Orleans	Jas. A. Paddock	17	61	8	11	32.9	2.22
East Bethel	Orange	Charles S. Paine	17	65	8	17	36.5	3.50
Middlebury	Addison	H. A. Sheldon	17	65	8, 29	22	38.3	3.03
Brandon	Rutland	Harmon Buckland	17	68	29	18	37.1	3.51
MASSACHUSETTS.								
Topsfield	Essex	A. M. Merriam	17	72	11	23	44.3	3.74
Georgetown	do	Henry M. Nelson	17	71	29	18	49.5	.....
Newbury	do	Jno. H. Caldwell	17	72	29	18	40.5	.....
Cambridge	Middlesex	A. Fendler	16, 17	67	12	20	40.8	.....
New Bedford	Bristol	Samuel Rodman	14	65	8	23	45.3	4.33
Worcester	Worcester	Joseph Draper, M.D.	17	69	11	20	41.8	2.36
Mendon	do	Jno. G. Metcalf, M.D.	16, 17	69	29	19	41.2	3.40
Baldwinsville	do	Rev. E. Dewhurst	17	66	8	14	.....	2.51
Amherst	Hampshire	Prof. E. S. Snell	16, 17	68	8	19	39.9	2.45
Springfield	Hampden	J. Weatherhead	16	72	11, 29	17	40.1	2.64

Table showing the range of the thermometer, &c., for November—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
MASSACHUSETTS—Continued.								
Westfield.....	Hampden.....	Rev. E. Davis.....	16	70	8, 11	19	40.2	3.10
Richmond.....	Berkshire.....	Wm. Bacon.....	16	63	11	12	36.7	3.08
Williams College.....	do.....	Prof. A. Hopkins...	17	68	8	17	37.9	1.78
RHODE ISLAND.								
Newport.....	Newport.....	Wm. H. Crandall...	17	61	11	23	43.7	4.69
CONNECTICUT.								
Pomfret.....	Windham.....	Rev. D. Hunt.....	16	68	29	18	40.6	2.64
Columbia.....	Tolland.....	Wm. H. Yeomans..	16	78	8, 11	28	43.5	.....
					28, 29			
Middletown.....	Middlesex.....	Prof. John Johnston.	16	74	8, 11, 29	20	42.3	3.96
Colebrook.....	Litchfield.....	Charlotte Rockwell.	16	67	8	13	37.3	.....
NEW YORK.								
Moriches.....	Suffolk.....	Miss N. Smith.....	16	67	8	24	46.5	4.34
South Hartford....	Washington....	G. M. Ingalsbe.....	16	72	8	17	39.3	4.66
Albany.....	Albany.....	H. M. Paine, M. D..	17	70	8	26	44.6	2.61
Fishkill Landing....	Dutchess.....	Wm. H. Denning...	17	66	11	23	40.8	3.46
Garrison's.....	Putnam.....	Thomas B. Arden...	16	65	8	22	41.6	3.17
Throg's Neck.....	Westchester....	Elizabeth Morris....	16, 18	64	8	22	42.9	.....
Deaf & Dumb Inst..	New York.....	Prof. O. W. Morris..	16	72	8	29	45.7	4.19
Columbia College....	do.....	H. B. Cornwall.....	16	67	8	25	42.4	.....
Flatbush.....	Kings.....	Eli T. Mack.....	16, 18	67	8	23	42.8	3.98
Newburgh.....	Orange.....	James H. Gardiner..	16	70	11	24	42.1	3.10
Gouverneur.....	St. Lawrence....	Cyrus H. Russell...	17	63	29	16	36.0	2.33
South Trenton.....	Oneida.....	Storrs Barrows.....	16	55	11, 13	20	34.9	2.42
					28, 29			
Oneida.....	Madison.....	S. Spooner, M. D...	17	70	29	19	38.2	6.23
Theresa.....	Jefferson.....	S. O. Gregory.....	17	63	29	18	37.2	3.01
Depauville.....	do.....	Henry Haas.....	16	62	29	20	37.3	5.30
Oswego.....	Oswego.....	Wm. S. Malcolm....	17	66	29	23	40.0	2.84
Palermo.....	do.....	E. B. Bartlett.....	16	66	29	20	36.2	3.35
Baldwinsville.....	Onondaga.....	John Bowman.....	17	65	30	21	37.2	.....
Skaneateles.....	do.....	W. M. Beauchamp..	17	66	28	21	38.1	.....
Auburn.....	Cayuga.....	John B. Dill.....	17	66	11	22	39.8	.....
Nichols.....	Tioga.....	Robert Howell.....	17	73	12, 30	21	37.6	.....
Geneva.....	Ontario.....	Rev. Dr. W. D. Wilson	15	65	11	25	41.1	1.73
Rochester.....	Monroe.....	Prof. C. Dewey.....	16	65	8, 29	26	39.7	1.70
Do.....	do.....	M. M. Mathews, M. D.	16	65	8	26	39.8	1.70
Buffalo.....	Erie.....	William Ives.....	16	66	28	23	40.5	0.94
NEW JERSEY.								
Paterson.....	Passaic.....	William Brooks.....	17	68	11	24	43.3	4.53
Newark.....	Essex.....	Wm. A. Whitehead..	16	70	8	24	43.2	3.30
Trenton.....	Mercer.....	E. R. Cook.....	17	70	11, 12	30	49.8	3.64
Burlington.....	Burlington.....	John C. Deacon.....	16	72	12	22	42.1	3.80
Moorestown.....	do.....	Thomas J. Beans....	16	75	12	22	42.7	3.45
Mount Holly.....	do.....	M. J. Rhees, M. D..	16	68	8, 11, 12	26	43.8	.....
Haddonfield.....	Camden.....	James S. Lippincott.	16, 17	68	12	22	42.2	3.59
Greenwich.....	Cumberland.....	R. C. Sheppard.....	17	68	12	25	43.9	3.56

Table showing the range of the thermometer, &c., for November—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
PENNSYLVANIA.								
Nyees	Pike	John Grathwohl	16	73	11	9	33.5	4.40
Fallsington	Bucks	Ebenezer Hance	17	69	11, 12	25	43.7	3.10
Philadelphia	Philadelphia	Pf. J. A. Kirkpatrick	17	66	11	27	45.2	3.60
Germantown	do	"Telegraph"	17	67	11	22	42.8	4.24
Moorland	Montgomery	Anna Spencer	16	71	8, 11, 12	24	42.5	3.55
Dyberry	Wayne	Theodore Day	17	67	11	12	34.5	.....
Nazareth	Northampton	L. E. Ricksecker	16	68	11, 12	24	41.4	.....
North Whitehall	Lehigh	Edward Kohler	17	64	11	19	41.2	.....
Ephrata	Lancaster	W. H. Spera	16	70	12	23	46.3	4.70
Harrisburg	Dauphin	John Heisely, M.D.	16	67	12	27	44.6	1.77
Tioga	Tioga	E. T. Bentley	16, 17	70	12	18	40.1	2.85
Pennsville	Clearfield	Elisha Fenton	15, 16	65	11	18	37.2	2.07
Connellsville	Fayette	John Taylor	17	67	12, 28	20	39.6	.....
Canonsburg	Washington	Rev. Wm. Smith, D.D.	17	66	11, 12	20	38.4	0.70
MARYLAND.								
Woodlawn	Cecil	Jas. O. McCormick	17	78	11	23	45.5	2.82
Annapolis	Anne Arundel	Wm. R. Goodman	17	65	12	28	46.5	3.66
DIST. OF COLUMBIA.								
Washington	Washington	Smithsonian Instit'n.	17	72	12	27	46.1	2.22
GEORGIA.								
Atlanta	Fulton	Frederick Deckner	19	78	30	27	51.8	4.53
MISSISSIPPI.								
Natchez	Adams	Robert McCary	16, 17	75	6	32	56.4	2.70
TENNESSEE.								
Clarksville	Montgomery	Wm. M. Stewart	16	70	6	27	47.5	1.22
KENTUCKY.								
Louisville	Jefferson	Mrs. L. Young	16	67	27	22	45.1	1.25
Chilesburg	Fayette	S. D. Martin, M.D.	16	70	6, 21	26	48.2	0.59
OHIO.								
Saybrook	Ashtabula	James B. Fraser	16	69	11	16	40.6	2.25
Austintown	do	E. D. Winchester	16	70	11	20	38.5	1.65
New Lisbon	Columbiana	J. F. Benner	16	65	11, 13	22	39.5	1.03
Steubenville	Jefferson	Roswell Marsh .....	.....	.....	.....	.....	41.5	0.86
Welshfield	Geauga	B. F. Abell, A. M.	16	69	11	20	40.1	2.05
Milnersville	Guernsey	Rev. D. Thompson	17	66	8	18	.....	.....
East Cleveland	Cuyahoga	Mr. & Mrs. G. A. Hyde	16	70	11	16	41.2	0.86
Wooster	Wayne	Martin Winger	16	71	28	18	38.4	.....
Gallipolis	Gallia	A. P. Rogers	16	70	28	24	42.2	1.00
Kelley's Island	Erie	Geo. C. Huntington	16	61	11, 12	32	42.8	0.43
Norwalk	Huron	Rev. A. Newton	16	72	11, 12, 28	23	39.7	0.50
Westerville	Franklin	Pf. H. A. Thompson	16	70	11, 20, 27, 28	24	40.0	.....
Kingston	Ross	Prof. Jno. Haywood	16	73	12, 28	22	41.5	0.51

Table showing the range of the thermometer, &c., for November—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
OHIO—Cont'd.								
Toledo	Lucas	J. B. Trembly, M.D.	16	67	28	26	41.1	0.31
Marion	Marion	H. A. True, M.D.	16	68	28	21	38.9	0.57
Urbana University..	Champaign.....	Prof. M. G. Williams.	16	71	12, 21	22	38.6	0.73
Ripley	Brown	G. Bambach, M.D.	15	79	12	30	45.7	0.64
Bethel	Clermont.....	Geo. W. Crane.....	16	71	12, 27	25	41.4	0.75
Cincinnati.....	Hamilton.....	George W. Harper..	16	75	8, 12	28	43.3	0.56
					24, 28			
College Hill.....	do	John W. Hammitt..	16, 17	70	11	29	42.8	0.28
Do.	do	L. B. Tuckerman...	15	70	8, 11, 13	26	40.5	0.30
					20, 24			
MICHIGAN.								
Monroe	Monroe	H. & F. Whelpley ..	16, 17	66	12	25	39.1	0.01
State Ag. College...	Ingham	Prof. R. C. Kedzie...	16	66	24, 27	23	38.6	0.68
Homestead	Benzie	G. E. Steele.....	15	60	26	24	38.6	.....
INDIANA.								
Vevay	Switzerland	Chas. G. Boerner....	16	78	8, 12, 13	24	44.1	1.25
Richmond	Wayne	John Valentine	16	68	27	20	37.8	0.73
Spiceland	Henry	Wm. Dawson	16	68	7, 21	24	41.0	0.80
Madison	Jefferson	Oliver Mulvey.....	16	74	27, 28	30	.....	.....
Columbia	Whitley	Dr. F. & Miss McCoy.	13, 15, 16	72	29	18	40.4	0.35
Indianapolis	Marion	W. W. Butterfield...	15, 16	65	7, 27	22	39.3	.....
New Harmony.....	Posey	Jno. Chappellsmith ..	15, 16	63	7, 27	27	44.6	0.21
ILLINOIS.								
Chicago	Cook	Samuel Brookes	16	60	5, 27	20	37.3	.....
Evanston	do	Oliver Marey	15	65	5	30	43.7	0.32
Aurora	Kane	Abiram Spaulding ..	13	58	5, 22	25	39.0	0.67
Sandwich	DeKalb	N. E. Ballou, M.D.	13	62	7	21	37.5	0.37
Ottawa	La Salle.....	Mrs. E. H. Merwin ..	13, 16	65	7	25	40.1	0.49
Winnebago.....	Winnebago.....	Jas. W. Tolman.....	13	62	27	22	38.0	0.42
Wyanet	Bureau	E. S. & Miss Phelps..	12	67	5	22	41.8	0.28
Tiskilwa	do	Verry Aldrich	16	62	5	26	41.8	.....
Elmira	Stark	O. A. Blanchard	16	64	5	20	40.6	0.19
Hennepin	Putnam	Smiley Shepherd	13	66	5	25	42.0	.....
Peoria	Peoria	Frederick Brendel ..	16	65	5	26	42.8	0.31
Springfield	Sangamon.....	G. M. Brinkerhoff ..	13	76	7, 11, 27	30	47.2	.....
DuBois	Washington	Wm. C. Spencer	17	68	7	23	44.4	0.35
Waverly	Morgan	Timothy Dudley.....	16	68	5, 7	22	41.8	0.00
Galesburg	Knox	Pf. W. Livingston ..	16	67	5	22	40.8	0.00
Augusta	Hancock	S. B. Mead, M. D ..	16	69	5	22	42.1	0.12
WISCONSIN.								
Manitowoc	Manitowoc	Jacob Lups.....	14	63	5, 7, 30	28	41.1	0.54
Milwaukee	Milwaukee	I. A. Lapham, LL.D	13	61	5, 7	26	40.5	0.31
Do	do	Carl Winkler	15	65	5	28	42.7	0.41
Geneva	Walworth	Wm. H. Whiting.....	13, 14	59	5	24	.....	.....
Delavan	do	Leveus Eddy	13	60	26	22	37.6	0.10
Waupacca	Waupacca	H. C. Mead	14	64	5, 27	25	39.4	.....
Weyauwega.....	do	J. C. & B. F. Hicks ..	13, 15	62	5	21	39.3	0.10
Embarrass	do	J. Everett Breed.....	15	64	27	22	37.5	0.84

Table showing the range of the thermometer, &c., for November—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
WISCONSIN—Cont'd.								
Rocky Run.....	Columbia.....	W. W. Curtis.....	14	62	5, 9	23	37.1	0.38
Baraboo.....	Sauk.....	M. C. Waite.....	13, 15, 16	64	5, 26	24	41.8	1.66
Beloit.....	Rock.....	H. D. Porter.....	14	60	26	19	37.1	0.10
Plymouth.....	Sheboygan.....	G. Moeller.....	15	61	4, 5, 7, 18 27, 30	25	38.5	0.40
MINNESOTA.								
Afton.....	Washington.....	Dr. & Mrs. Babcock.	14	64	27	11	37.7	.....
St. Paul.....	Ramsey.....	Rev. A. B. Paterson.	15	63	27	18	37.0	0.23
Minneapolis.....	Hennepin.....	Wm. Cheney.....	15	67	5	15	26.8	0.63
Forest City.....	Meeker.....	H. L. Smith.....	15	66	5	14	36.6	0.50
New Ulm.....	Brown.....	Charles Roos.....	15	71	27	18	40.0	0.31
IOWA.								
Clinton.....	Clinton.....	J. P. Farnsworth, M.D.	15, 16	65	27	20	39.6	1.00
Lyons.....	do.....	A. T. Hudson.....	14	64	4	26	40.4	0.42
Davenport.....	Scott.....	George B. Pratt.....	17	69	5	22	39.3	0.24
Dubuque.....	Dubuque.....	Asa Horr, M. D.....	14	63	27	25	40.9	0.20
Muscatine.....	Muscatine.....	I. P. Walton.....	16	64	27	17	36.5	0.20
Fort Madison.....	Lee.....	Daniel McCready.....	16	65	5	21	42.1	0.28
Guttenberg.....	Clayton.....	Philip Dorweiler.....	16	64	27	21	38.5	0.41
Ceres.....	do.....	John M. Hagensick.....	15	63	5, 27	22	36.3	.....
Manchester.....	Delaware.....	Allen Mead.....	14	64	27	12	36.5	0.89
Mount Vernon.....	Linn.....	Prof. A. Collins.....	14	63	5	22	39.5	.....
Iowa City.....	Johnson.....	Prof. T. S. Parvin.....	13	66	5	20	42.6	0.25
Independence.....	Buchanan.....	A. C. Wheaton.....	16	67	27	13	36.4	0.80
Do.....	do.....	D. S. Deering.....	15	61	27	20	35.2	.....
Waterloo.....	Black Hawk.....	T. Steed.....	16	66	5, 27	18	40.2	.....
Iowa Falls.....	Hardin.....	N. Townsend.....	14, 16	62	5	18	37.8	0.03
Des Moines.....	Polk.....	Rev. J. A. Nash.....	16	67	5	17	40.2	0.25
MISSOURI.								
St. Louis.....	St. Louis.....	Geo. Engelman, M.D.	8	70	5	27	47.1	0.00
St. Louis University.....	do.....	Rev. F. H. Stuntebeck	8, 16	70	5	28	49.1	0.08
Athens.....	Clark.....	J. T. Caldwell.....	16	63	6	28	46.2	2.75
Canton.....	Lewis.....	George P. Ray.....	16	69	5	19	40.6	.....
Harrisonville.....	Cass.....	John Christian.....	8, 16	68	5	20	46.8	0.04
Easton.....	Buchanan.....	P. B. Sibley.....	16, 23	69	2, 26, 29	25	46.5	0.01
KANSAS.								
Olathe.....	Johnson.....	W. Beckwith.....	8, 23	69	5	20	44.4	.....
Atchison.....	Atchison.....	Dr. H. B. & Miss Horn	10, 11	74	5	18	44.3	.....
Fort Riley.....	Davis.....	Jos. M. Shaffer.....	23	72	2, 27	26	48.3	.....
NEBRASKA TER.								
Elkhorn.....	Washington.....	John S. Bowen.....	23	67	5	17	41.9	.....
Bellevue.....	Sarpy.....	Rev. Wm. Hamilton.	12, 15	68	5	24	45.2	.....

NOVEMBER, 1865.

Table showing the average temperature and fall of rain (in inches and tenths) for the month of November, in each year named, and for the five years first named, collectively, with the average number of places in each State in which the observations were made.

States and Territories.	A. V. number of places.	Averages, 1855.		Averages, 1856.		Averages, 1857.		Averages, 1858.		Averages, 1859.		Av. for five years.		Averages, 1863.		Averages, 1864.		Averages, 1865.	
		Mean temp.	Mean rain.	Deg.	In.	Mean temp.	Mean rain.	Deg.	In.	Mean temp.	Mean rain.	Deg.	In.	Mean temp.	Mean rain.	Deg.	In.	Mean temp.	Mean rain.
Maine	6	37.1	4.9	35.1	3.1	37.1	3.3	37.1	3.3	37.1	4.7	35.1	3.6	36.4	6.4	36.2	5.80	37.0	4.47
New Hampshire	4	36.4	3.7	34.5	2.6	35.7	2.0	35.7	2.0	35.7	3.1	34.6	2.9	35.1	2.5	35.2	3.78	37.8	2.33
Vermont	5	36.6	1.3	33.2	2.3	35.7	2.2	35.7	2.2	35.7	3.2	33.9	2.4	35.9	2.5	35.2	3.32	35.9	3.07
Massachusetts	12	39.5	4.3	38.5	3.0	40.6	2.4	38.5	2.6	41.3	2.9	39.1	3.0	38.1	2.5	39.4	4.75	41.5	2.94
Rhode Island	1	42.0	3.8	39.4	2.0	42.3	2.4	37.2	2.4	43.3	2.3	40.9	2.6	43.3	7.5	39.4	4.75	43.7	4.69
Connecticut	5	42.6	3.3	40.7	3.5	40.7	3.0	35.5	3.2	41.7	2.6	40.3	3.1	43.1	5.3	40.0	4.80	40.9	3.30
New York	18	39.8	2.0	38.9	2.4	38.2	3.2	36.0	4.2	41.4	2.9	38.9	2.9	42.0	3.6	39.9	4.36	40.2	3.21
New Jersey	4	44.7	2.7	42.3	4.0	42.3	1.4	38.7	4.3	45.3	3.7	42.7	3.2	44.1	2.7	42.6	3.73	43.9	3.70
Pennsylvania	20	44.3	3.0	40.5	2.5	39.7	1.9	38.4	4.3	43.2	2.5	41.2	2.3	43.6	3.6	41.9	3.45	40.8	3.10
Delaware	1	44.5	44.7	47.0	2.4	44.4	2.4	44.4	5.1	45.2	3.5	45.2	3.7	43.9	4.80	43.9	4.80	43.9	4.80
Maryland	5	46.5	1.5	43.9	2.3	42.9	1.5	40.3	3.8	45.7	1.7	43.8	2.1	46.6	2.7	44.8	3.15	46.0	3.24
District of Columbia	1	48.3	1.1	44.0	2.2	42.3	1.3	41.5	4.2	48.1	1.9	44.8	2.1	47.0	1.7	47.0	3.15	46.1	2.22
South Carolina	6	39.9	1.4	37.2	3.3	36.8	2.5	49.3	2.8	59.6	2.6	38.1	2.5	59.6	3.00	57.7	3.00	47.5	1.22
Tennessee	1	52.6	4.7	44.3	6.0	45.6	5.7	41.6	2.9	51.7	4.7	47.2	4.8	45.7	3.1	45.1	6.30	46.7	0.92
Kentucky	1	51.4	3.6	43.5	4.1	42.2	2.8	39.9	2.6	48.8	3.0	45.1	3.2	42.4	3.2	42.1	3.53	40.9	0.85
Ohio	21	45.4	5.2	40.1	3.0	36.1	5.7	36.9	3.9	44.0	4.5	40.5	4.5	45.4	3.1	35.9	3.34	38.8	0.35
Michigan	8	39.8	5.2	34.5	3.1	31.7	2.9	35.4	3.7	38.3	4.5	35.9	3.8	38.3	3.6	41.0	5.65	41.2	0.67
Indiana	5	46.2	3.7	40.9	3.0	38.9	5.8	38.8	3.2	45.7	4.2	42.1	4.0	41.3	3.6	37.5	3.59	41.3	0.30
Illinois	14	41.8	2.8	35.0	3.6	33.0	2.7	34.8	3.8	40.8	2.9	38.1	3.2	38.7	1.4	37.3	3.04	39.3	0.48
Wisconsin	10	36.7	2.1	33.7	3.7	29.5	1.6	35.5	2.9	36.4	2.9	37.0	2.7	35.4	4.0	33.3	2.97	37.6	0.42
Minnesota	3	33.1	1.4	25.3	1.4	25.2	2.6	26.8	1.3	30.0	2.0	28.1	1.7	30.5	0.3	30.0	1.93	37.6	0.42
Iowa	8	36.1	3.1	33.5	3.5	31.3	3.5	31.3	3.7	38.0	2.0	34.0	5.2	34.8	2.9	33.1	2.97	39.0	0.41
Missouri	3	47.1	5.2	46.2	4.6	39.1	3.2	37.6	4.9	46.8	5.4	43.4	5.1	40.1	1.3	39.8	4.06	43.8	0.72
Nebraska Territory	3	35.5	.....	.....	.....	32.1	1.8	31.0	0.6	37.3	0.7	33.4	1.2	39.3	2.0	33.7	1.45	43.6	.....
Kansas	3	35.5	.....	.....	.....	35.1	3.6	34.3	2.2	45.0	0.7	38.3	2.2	40.6	1.9	37.8	2.67	45.7	.....
California	3	.....	0.0	5.2	0.7	54.8	2.3	55.5	0.4	53.5	9.0	54.9	2.5	40.6	1.9	37.8	2.67	45.7	.....

NOTES OF THE WEATHER.—NOVEMBER, 1865.

Steuben, Maine.—November 5.—The rain fell heavily after 7 o'clock last night till about midnight, then in torrents, with a severe gale from the southeast, till about 4 a. m. this morning. 13th, the heaviest and whitest frost ever seen by the observer; thermometer 6° at 7 a. m. Two and four-tenths inches of snow fell during the month.

West Waterville, Maine.—Twelve inches of snow fell during the month.

Cornish, Maine.—From the 12th to the 19th November a delightful "Indian summer." Eight inches of snow fell during the month.

Lisbon, Maine.—November 15 to 18 was very fine and pleasant "Indian summer" weather. The autumn has been very fine, mild and pleasant; no snow on the ground, roads very good and smooth, ground scarcely frozen, and no hindrance to ploughing. Snow fell during the month to the depth of four inches and eighty-five hundredths.

Gardiner, Maine.—Half an inch of snow fell in November.

Standish, Maine.—Three and seven-hundredths inches of snow fell during the month.

Lee, Maine.—November 30.—The ground is free from snow and has been for the last seven or eight days. The ground is frozen a few inches deep. Eight inches of snow fell during the month. The autumn has been warm and pleasant.

North Barnstead, N. H.—Fall of snow in November, two and a half inches.

Stratford, N. H.—Sixteen inches of snow during the month.

Claremont, N. H.—An exceedingly comfortable November; cattle and sheep must have grazed out nearly all the time. Five and a half inches of snow fell.

Shelburne, N. H.—November 12.—Heavy white frost. 21st, some sleighs out. 30th, ground frozen but little; good ploughing. Ten inches of snow fell during the month.

Concord, N. H.—One inch of snow recorded on the 19th.

Lunenburg, Vermont.—November 7.—Some sleighs out, but the ground is not much frozen and the sleighing not good. Fall of snow during the month, seven inches.

Middlebury, Vermont.—Four and a half inches of snow fell during the month.

Brandon, Vermont.—November 11.—The ground froze half an inch last night; water froze a quarter of an inch. 29th, the ground froze an inch last night. Eight and a half inches of snow fell during the month.

Craftsbury, Vermont.—Twelve inches of snow fell during the month.

Randolph, Vermont.—Six inches of snow fell during the month.

Georgetown, Mass.—The most powerful rain-storm of the month, the longest continued, and the heaviest fall since the storm in the latter part of March, commenced in the forenoon of Sunday the 19th, and continued until Wednesday morning early, probably ceasing about 4 a. m.

Richmond, Mass.—Three and a quarter inches of snow fell during the month.

New Bedford, Mass.—November 7.—Wild geese passed over in the evening.

Topsfield, Mass.—November 23.—Number of flocks of wild geese flying south. The month has been unusually mild and pleasant. Three-tenths of an inch of snow fell.

Newport, R. I.—November 28.—A snow-squall of a few minutes at 3 a. m., very large flakes; the first snow of the season.

Pomfret, Conn.—Much of November was very pleasant; not rain enough to raise deep wells; an inch of snow fell on the 27th.

Theresa, N. Y.—Indian summer from the 12th to the 18th. Twelve inches of snow fell during the month, and the ground was covered with snow twelve days.

New York, N. Y.—November 27.—The ground was frozen to the depth of an inch and a half last night, and ice formed a quarter of an inch thick in some places.

Oneida, N. Y.—Six inches of snow during the month.

Rochester, N. Y.—November 4.—The first snow of the season fell this forenoon. 7th, one inch of snow on the hills about Wayland and Dansville, but none here. 22d, the first snow of the season sufficient to cover the ground began to fall this morning; it fell to the depth of three inches; no more during the month. The last half of the month was very warm for the season, and good for business on farms. Indian summer was from the 13th to the 19th.

Oswego, N. Y.—Half an inch of snow fell in November.

Garrison's, N. Y.—The very moderate temperature of November allowed the farmer to forward his ditching, fencing, and road-making for the next agricultural season.

Gouverneur, N. Y.—Twelve and a half inches of snow fell during the month.

Geneva, N. Y.—Three inches of snow fell during the month.

South Trenton, N. Y.—Twenty-one inches of snow fell during the month.

Nichols, N. Y.—The snow that fell from the 19th to the 23d remained on the tops of high hills till the end of the month, but wholly bare on the flats.

Vermillion, N. Y.—Ten and a half inches of snow fell during the month. This November has been the coldest, except 1864, during the last twelve years. The autumn has been the coldest during that time.

Baldwinsville, N. Y.—Seven inches of snow fell during the month.

Depauville, N. Y.—Nine inches and four-tenths of snow fell during the month. Owing to the dry fall weather and the cold wintry spell in the beginning of November, pasturage was insufficient, at least for dairy cows. Most of the month was favorable for out-door work, and the usual amount of ploughing is done and may be finished before winter in earnest sets in.

South Hartford, N. Y.—The month of November has been very propitious for the agriculturist. The week ending the 18th was very beautiful Indian summer weather. Three inches of snow fell during the month (on the 19th.) The Green mountains in Vermont are now (December 1) covered with snow. Here the ground is unfrozen, and rivers, lakes, and canals are open.

Moorestown, N. J.—Haze from the 9th to the 17th, making the period called "Indian summer" more distinct than usual. 30th, no snow has fallen here to this date.

Paterson, N. J.—November 30.—There has been no snow here yet, with the exception of a few flakes at 10 a. m. on the 7th, and 6 a. m. on the 27th, which melted before reaching the ground. No severe frost.

Trenton, N. J.—November 6.—Ice this morning about an eighth of an inch thick, also heavy frost. 8th, ground frozen for the first time; depth about an inch. 27th, from 9 p. m. to midnight the wind blew a perfect gale, tearing off old roofs, fences, &c., &c.

Haddonfield, N. J.—November 6.—Ice formed last night an eighth of an inch thick. 8th, ice formed last night half an inch thick; ground frozen.

Greenwich, N. J.—November 16.—For the last four days the mildness of the weather, and the general haziness of the atmosphere, have caused this to be regarded as the usual Indian summer. 30th, the month has been a mild one, no snow has fallen and but little ice formed.

Newark, N. J.—The mean temperature of November was almost identical with the average of the month during the last twenty-one years. From the 5th until the 18th, almost without interruption, fair weather prevailed; for the greater portion of the time air, sky, and temperature presented those pleasing combinations which characterize Indian summer. The mean temperature of the autumn was nearly a degree and two-tenths above the average of the preceding twenty-one, having been exceeded only by the autumns of 1846, 1849, and

1850. The quantity of water falling was about a tenth of an inch less than the average for autumn.

Philadelphia, Pa.—November 5.—Soft hail or snow at intervals from 2 p. m. to 3½ p. m.; the first of the season. 6th, the first ice observed in the streets in shallow pools an eighth of an inch thick.

Horsham, Pa.—From the 13th to the 18th of the month, inclusive, beautiful Indian summer weather prevailed, the air hazy and soft as June. This was followed by a northeast storm on the 21st, in which two inches and four-tenths of rain fell in about twelve hours.

Dyberry, Pa.—November 30.—Ponds have been frozen over two or three times during the month, this morning about an inch thick. Three and four-tenths inches of snow fell during the month.

Blooming Grove, Pa.—Four and a half inches of snow fell during the month.

Ephrata, Pa.—Fall of snow forty-five hundredths of an inch.

Nazareth, Pa.—November 5.—The first snow of the season.

North Whitehall, Pa.—The weather of November has been very pleasant for the season. Roads are in excellent condition; not so much snow as to whiten the ground.

Tioga, Pa.—November 30.—Ground frozen quite hard; four inches of snow fell during the month.

Grampian Hills, Pa.—November 13.—Warm Indian summer. 30th, the month has been favorable for maturing and gathering the crops. There was a very large proportion, for November, of clear, fine, and dry weather, there being but seven days in which there was rain, and in these mostly light showers. The depth of snow was five inches.

Woodlawn, Maryland.—November 5.—A little snow at 3 p. m., the first of the season. 29th, snow fell slowly from 10 a. m. to 5 p. m., but making very little depth, not more than three-fourths of an inch at any time during the day, melting nearly as fast as it fell. In sheltered places some of it lay till the morning of the 30th.

Clarksville, Tenn.—November 5.—This morning the first skim ice of the season appeared; all garden vines killed.

Chilesburg, Kentucky.—November 4.—The first snow of the season fell at 9 o'clock this evening; it whitened the ground, but there was not enough to measure. 28th, a little snow mingled with rain this evening. 30th, the pastures are fine and grass more abundant than for many years. Horses, cattle and sheep are all fat and in fine condition for entering the winter. A number of fruit trees blossomed last month, but of course the fruit on them all has been killed by the cold weather since.

Toledo, Ohio.—As the month of September was unparalleled by the great amount of rain that fell, so November was unprecedented for the least quantity for the month. The temperature of the month was even, mild and pleasant.

Austinburg, Ohio.—In the night of the 4th and morning of the 5th half an inch of snow fell. 11th to the 17th, Indian summer weather; a fine fall so far for farmers to secure their crops. 20th, roads quite dusty for several days; the most pleasant weather ever known here at this time of year.

Urbana, Ohio.—A quarter of an inch of snow fell during the month; the weather throughout the month has been unusually pleasant for November, the Indian summer character prevailing. The quantity of water which fell (including the snow) was less than three-fourths of an inch, which is less than one-fifth the average for November. A single instance has occurred since the beginning of 1852, when the quantity for a month was less; in September, 1862, it was only three-fifths of an inch.

Kelley's Island, Ohio.—November 5.—Quite a hard frost; ice the thickness of window glass in exposed situations; mud stiffened in some places. Indian summer from the 12th to the 21st.

Kingston, Ohio.—November 5.—The first snow-squall of the season came last night.

New Lisbon, Ohio.—Five-hundredths of an inch of snow recorded during the month.

Bethel, Ohio.—November 4.—First snow of the season at 8 p. m., very little only, on boards. 12th, greatest white frost this autumn.

Welshfield, Ohio.—Wild geese (chiefly *anser canadensis*) going south from the 7th to the 12th. Nine and a half inches of snow fell during the month.

Gallipolis, Ohio.—One inch of snow during the month.

College Hill, Ohio.—A quarter of an inch of snow during the month.

Marion, Ohio.—Light snow on the 4th and 28th, enough to whiten the ground. 25th, a real Indian summer day.

Wooster, Ohio.—Half an inch of snow recorded on the 29th.

Saybrook, Ohio.—Half an inch of snow is recorded on the 4th.

Homestead, Michigan.—November 5.—It snowed about three inches last night, and to-day has been cold and like winter. 30th, the light snow of last night passed off before morning by rain from the southwest, and this afternoon snow falls again.

Lansing, Michigan.—There was a snow-storm from the southwest on the 30th, beginning at 9.30 a. m. and lasting till 3.30 p. m. Much of the snow melted as it fell, so that there was but little over an inch in depth of snow at any one time. The month was quite dry, wells and springs low; a beautiful month for work.

Spiceland, Indiana.—An inch and four-tenths of snow recorded on the 28th. The weather during nearly all the month was very fine, much more so than usual.

Richmond, Indiana.—An inch of snow is recorded on the 5th, and an inch on the 28th.

Columbia City, Indiana.—One inch of snow on the 4th.

Vevay, Indiana.—The first snow of the season was on the 4th, from 8 to 10 p. m. The rains this month have been light, drizzling showers; there have been no high winds during the month.

Aurora, Illinois.—Two inches of snow on the 1st, and three inches on the 28th. The weather during the month has been very fine, with a clear sky and very little wind.

Fiskilwa, Illinois.—Good, dry, smoky Indian summer weather all through the month; there never was better for fall work, and it has been well improved.

Dubois, Illinois.—No snow fell in November.

Sandwich, Illinois.—The month was very fine. Rain fell only on the 1st day of the month, and snow (one inch) only on the 28th. The mean cloudiness was less than the observer ever saw before in the same month during the long period that he has observed weather phenomena. Only one or two days were smoky; it could not really be called Indian summer.

Galesburg, Illinois.—November was fine, warm and pleasant.

Ottawa, Illinois.—November 3.—A very hard frost. 4th, flurries of snow. 5th, hard frost, ice an inch thick. 10th, ice five-eighths of an inch thick. 29th, an inch of snow. 30th, the weather and temperature for nearly all the month has been like a delightful dream or a pleasing romance.

Winnebago, Illinois.—November 28.—Moderate snow from 9 a. m. to 2 p. m.; depth one inch. 30th, light snow showers in the afternoon.

Athens, Missouri.—The month of November was very favorable, with very little rain, no snow, several heavy hoar frosts, but little keen, biting weather. There was less wind than the observer ever noticed before. The ground has not frozen and is very dry.

Easton, Missouri.—No snow during the month, and no rain, except a hundredth of an inch on the 27th.

Harrisonville, Missouri.—No snow during the month, and no rain, except four-hundredths of an inch on the 1st.

Canton, Missouri.—No rain or snow during the month.

Baraboo, Wisconsin.—This month has been the driest known to the oldest inhabitants. There was only one inch and an eighth of rain, which fell on the 1st, and only three and three-quarters inches of snow on the 28th and 29th.

Embarrass, Wisconsin.—The month was dry, mild, and pleasant. From the 8th to the 28th was beautiful Indian summer weather. Two inches of snow fell during the month.

Rocky Run, Wisconsin.—The month was very pleasant and favorable for out-door work; ploughing throughout the whole month.

Weyauwega, Wisconsin.—November was a very pleasant month. There was but one rain-storm during the month, (on the 1st,) and only a tenth of an inch fell. It snowed for a short time on the 29th, which was the only snow during the month. From the 1st to the 29th there was no storm of any kind.

Milwaukee, Wisconsin.—November was very dry, with Indian summer weather nearly all the month. The only rains were three-tenths of an inch on the 1st, a sprinkle on the 3d, and a hundredth of an inch on the 28th.

Delavan, Wisconsin.—November 8.—Indian summer began; atmosphere blue, lasting through the month.

Manitowoc, Wisconsin.—November 8, 13, 14, 15.—Indian summer, fog. 15th, ripe strawberries and blossoms.

Beloit, Wisconsin.—The month was remarkably pleasant. Old settlers think they are reminded of the Indian summer of earlier years. Lilac buds have been growing for the last few days.

Minneapolis, Minnesota.—November 30.—First ice in the Mississippi river at this point. An inch and a quarter of snow fell during the month, (on the 28th.)

Afton, Minnesota.—November 30.—Navigation is uninterrupted; there is no ice in Lake St. Croix.

St. Paul, Minnesota.—Three-quarters of an inch of snow fell on the 28th, and a very little on the 30th.

Forest City, Minnesota.—Three inches of snow on the 1st, and two inches in the night of the 27th.

New Ulm, Minnesota.—November was a very pleasant month, admitting of every kind of work to be done in the open air; farmers are ploughing and mechanics building. The observer has been here since 1858, but does not remember such fine weather at this time of the year. The Minnesota river is still open.

Davenport, Iowa.—No snow recorded.

Muscatine, Iowa.—From the 5th to the 28th the weather was very fine. No snow is recorded.

Dubuque, Iowa.—November 15.—Exceedingly heavy dew this morning; the dust of the streets was saturated with its moisture one-fourth of an inch deep. The observer was informed by the city watchmen that there was no rain during the night. 28th, two inches of snow to-day.

Fort Madison, Iowa.—The amount of rain this month was less than in any since the observer commenced keeping a record, in 1848. The ground is not dry, but in good order for the plough, and is frozen only in the mornings; wells have plenty of water. Excellent weather for gathering corn.

Manchester, Iowa.—Two inches of snow on the 28th.

Waterloo, Iowa.—Rained all day on the 1st; the only rain during the month. Corn-fields full of wild geese all the month. Most pleasant November for the last eight years.

Iowa Falls, Iowa.—No snow or rain during the month except one-hundredth

of an inch of snow on the 28th, and three-hundredths of an inch of rain on the 30th.

Independence, Iowa.—Half an inch of rain on the 1st, and two inches of snow on the 28th.

Clinton, Iowa.—Half an inch of rain fell on the 1st, and an inch of snow on the 28th, but it disappeared the next day. The month was one of the finest Novembers the observer ever saw; nearly all the month mild, smoky, Indian summer.

Guttenburg, Iowa.—Five-hundredths of an inch of snow fell on the 4th, and four inches on the 28th.

Des Moines, Iowa.—Excepting a few days of unpleasant weather during the first part of the month, and a little rain at that time, it has been one of the most remarkable Novembers for many years. The sky has been cloudless nearly all the time; it has been one prolonged Indian summer.

Fort Riley, Kansas.—A flock of geese flying in a westerly direction on the 9th and 13th. Prairie on fire northeast and south of the garrison on the 21st.

Elkhorn City, Nebraska.—November 1.—Snow before day; at 9½ a. m. melting. 12th, flocks of blackbirds. 17th, a few blackbirds. 30th, the farmers are still behind with their work, and much corn remains in the fields. There has been no weather to injure it yet, though there have been frequent frosts during the month. The autumn months have been warm beyond precedent.

Bellerue, Nebraska.—November was a remarkably dry and pleasant month, the thermometer averaging about the same as the month of October for several years past. Geese have been flying back and forth and staying. Navigation is pretty good. The last boat went down on the 29th. No frost in the ground except slightly on some mornings, which left soon after sunrise.

NOVEMBER METEORS.

Moriches, Long Island, N. Y.—November 12.—At a late hour in the evening the clouds cleared away entirely, but at no period was any extraordinary display of meteors observed, or, indeed, any display at all. The health of the observer did not allow of much exposure in the open air. Early in the morning of the 13th, when Venus had just risen, the horizon was clear, but nothing was seen at several times of looking out.

Vermillion, N. Y.—November 13.—A very remarkable circumstance occurred this morning in the form of meteors, or shooting stars. Shortly after midnight they were falling fast in all directions; counted twenty between 6 and 7 a. m.

Kingston, Ohio.—November 13.—This morning, about 5 o'clock, there was a very fair show of meteors. The observer saw a large number, some of them quite brilliant; their trace back concentrated in the constellation Leo. Two of the school-girls, from about 5 o'clock till full daylight, counted, one of them said, a hundred and twenty.

Wooster, Ohio.—November 13.—The observer was informed, by good authority, that an unusual number of shooting stars were seen this morning.

Saybrook, Ohio.—November 13.—Eleven shooting stars were noticed during the evening. 14th, sixteen shooting stars were counted from 5 to 6 a. m. A bright one was noticed in Ursa Major at 5.34 a. m.; it left a luminous trail behind it, lasting some seconds.

Madison, Indiana.—November 13.—Quite a number of meteors were observed this morning. A part of the train of light left by one of them existed for about four minutes, fading out very gradually.

Waverly, Illinois.—Preparations were made on the evening of the 13th and 14th for observations of meteors; but to half-past eleven none were discovered, at which time the sky became overcast, and continued so until morning.

Winnebago, Illinois.—November 13.—A number of meteors were observed during the evening. 14th, two bright meteors observed in Boötes about 6.30 a. m.; a number previously observed, time not noted.

Rocky Run, Wisconsin.—November 13.—From 5 a. m. till daylight meteors were seen in all directions, the greater number north of the zenith; they appeared like little flashes of lightning. 14th, from 5 a. m. till daylight very bright meteors in all directions—one in about every five minutes till daylight. One started from near the zenith, course northwest, to ten degrees of the horizon. For about six feet of the latter end of its course it left a flashing light for about five minutes. It had the appearance of phosphorus, the light flashing, and then dying away, and so on, less and less till it disappeared.

Fort Madison, Iowa.—Quite a number of shooting stars on the night of the 14th and 15th, from 8 to 9 o'clock.

